ORDER NO. MAVR0304004C8

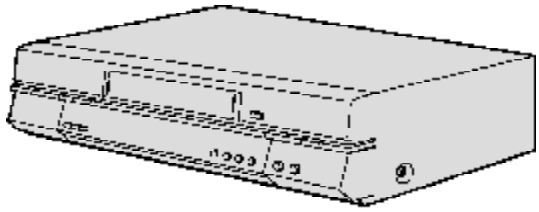
Service Manual

Video Cassette Recorder

Panasonic VHS PAL NTSC

NV-MV20GC / NV-MV20GCS / NV-MV20GM / NV-MV20GL / NV-MV20EE / NV-MV20GCU / NV-MV20GCF / NV-MV20GH

R4-MECHANISM



SPECIFICATIONS

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ITEM	SPECIFICATION		ITEM	SPECIFICATION
POWER	SOURCE: 110-240V AC 50/60 Hz (NV-MV20GC/GCS/GM/EE/GCU/GCF/GH) 220-240V AC 50/60 Hz (NV-MV20GL)		AUDIO	HEAD: 1 Stationary head (Normal-mono only)
	CONSUMPTION: 11 watts			INPUT: AUDIO IN (AV1: REAR) Connector (Phone type) -6 dBV (500mV), More than 10kΩ
RECORDING SYSTEM	2 rotary heads, helical scanning system			OUTPUT: AUDIO OUT (AV1: REAR) Connector (Phone type) -6 dBV (500mV), Less than 1kΩ
	PAL/ NTSC		TAPE SPEED	SP: 23.39 mm/s (PAL), 33.3 mm/s (NTSC) LP: 11.695 mm/s (PAL) EP: 7.796 mm/s (PAL), 11.1 mm/s (NTSC) Record/Playback Time (PAL): SP: 4 hours with 240 min. type tape LP: 8 hours with 240 min. type tape EP: 12 hours with 240 min. type tape FF/REW Time: 60 sec. with 180 min. type tape JET REW Time: 43 sec. with 180 min. type tape
TV TUNER SYSTEM	NV-MV20GC/ GCS/GM/EE/ GCU/GCF/GH	VHF: CHC1-CHC12 (PAL/SECAM D) CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) UHF: CHC13-CHC57 (PAL/SECAM D) CHE21-CHE69 (PAL/SECAM G) CHE21-CHE69 (SECAM K) CHE21-CHE69 (PAL I) CATV: CHZ1-CHZ35 (PAL/SECAM D) CHS1-CHS41 (PAL/SECAM B) 44 MHz-470 MHz (SECAM D)	OPERATING TEMPERATURE	5°C - 40°C
	NV-MV20GL	VHF: CHA0-CHA12 (PAL B) CHEA1-CHEA11 (PAL B) UHF: CHA28-CHA69 (PAL G) CHE21-CHE69 (PAL G) CATV: 45MHz-470MHz (PAL B) 44MHz-470MHz (PAL B)	OPERATING HUMIDITY	35% - 80%
			DIMENSIONS	430 (W)×89 (H)×227 (D) mm
			WEIGHT	3.0 kg
RF OUT SYSTEM	NV-MV20GC/ GCS/GM/EE/ GCU/GCF/GH	UHF: CHE21-CHE69 (PAL/SECAM G, SECAM K, PAL I) 71 ± 3 dBμ, 75 Ω closed	STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. Infra-red Remote Controller 1 pc. AV Cable 1 pc. AC Plug Adaptor (NV-MV20GC)
	NV-MV20GL	UHF: CHA28-CHA69/CHE21-CHE69 (PAL G) 71 ± 3 dBμ, 75 Ω closed	SOLDER	This model use lead free solder (PbF).
VIDEO	HEADS: 2 rotary heads 1 pair for recording and playback (L-R heads)			
	INPUT: VIDEO IN (AV1: REAR) Connector (Phone type) 1.0 Vp-p, 75 Ω terminated			
	OUTPUT: VIDEO OUT (AV1: REAR) Connector (Phone type) 1.0 Vp-p, 75 Ω terminated			

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. INTRODUCTION

1.1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. **Adjustment procedures, Disassembly Procedures and Assembly Procedures for Mechanism Chassis are separate volume from this service manual.**
   Please refer to the service manual for R4-Mechanism Chassis. (Order No. VRD0202010C8)
2. **The Model No. is indicated on the Schematic Diagram and Circuit Board Diagrams as follows.**

Model No.	Indication Mark
NV-MV20GC/GCS/GM	(A)
NV-MV20GL	(B)
NV-MV20EE	(C)
NV-MV20GCU/GCF	(D)
NV-MV20GH	(E)

1.2. ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:
PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:

- **Pb free solder has a higher melting point than standard solder, Typically the melting point is 50-70°F (30-40°C) higher. Please use**

a high temperature soldering iron. In case of soldering iron with temperature control,please set it to 700±20°F (370±10°C)

- Pb free solder will tend to splash when heated too high (about 1100°F/600°C).

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

2. GENERAL DESCRIPTIONS

2.1. SERVICE CAUTION-1

When the Microprocessor IC6001 and/or Back-up battery B7751 are replaced, read the following procedure carefully and proceed it.

[REASONS]
There is a RAM in the IC6001, which is backing up:

1. **Programme Navigation Data [See NOTE1]**
2. **TV Tuning Data**
3. **PG Shifter Adjustment Data**
4. **Option Setting Data**

When IC6001 are replaced, all above listed data become not available.
These data is backed up by using the power source of:
***AC Connected: AC Power source**
***AC Disconnected: Back-up Battery (B7751) & Back-up Capacitor (C7752)**

[NOTE1]
As for your reference, without inserting a tape into a VCR, you can confirm that the NAVI data that is back up with IC6001 as shown in the following steps.

1. **Indicate the "NAVI" mark on the Front Information Panel. (Press the Menu button and select the option, then set the "NAVI" to ON mode.)**
2. **Turn on the Service Mode and press the "NAVI" button on the Remote Controller in more than 5 seconds. The "NAVI" data list is displayed on the Monitor. (Press the "MENU" button on the Remote Controller for cancellation.)**

Although stored NAVI data can be confirmed on the monitor, there is no way to transfer the NAVI data to IC6001which is newly mounted.

2.1.1. REPLACING PROCEDURE [IC6001]

[1.PREPARATION]
Before replacing IC6001:

1. **Take note that stored TV broadcast channels. (Because, its user may store TV broadcasts by manually other than "Auto Tuning" operation and it is also erased.)**

NOTE:
During servicing, do not make a short circuit between IC6001-pin 37 (5V) with other line/ Components otherwise IC6001 may be broken.

CAUTION:

***When replacing the B7751, be sure to read/follow the "HOW TO REPLACE THE LITHIUM BATTERY" section.**

[2.REPLACING PROCEDURE IN STEPS]

STEP1.PREPARATION

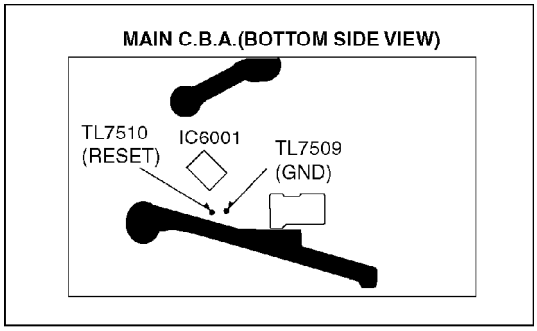
1. **Disconnect the AC plug before removing the C.B.A. with Mechanism unit by referring to the Disassembly procedure.**

STEP2.REPLACE THE IC6001

1. **Replace the IC6001. (Do not make a short circuit between IC6001-pin37 and other pins/ components.)**

STEP3.RESET THE IC6001 AT ONCE

1. **Connect the AC plug.**
2. **Connect a jumper wire between TL7510 (RESET) and TL7509 (GND) for a second to reset the Microprocessor IC6001.**



Note:
Since the resistance at pin 2 as well as pin 3 of IC6001 decides the model distinction data, there is no need to set up the Model code, which is necessary in the previous models.

STEP4.LINE-IN SETTING & ACTIVATE PLUG-IN A.T.P.
(FOR OTHER THAN NV-MV20GL)

1. **Press the Channel up and down keys simultaneously for more than 3 seconds, under the condition of the no tape is in the unit.**
2. **Confirm that "AV" can be displayed on the FIP by pressing the CH UP and CH DOWN buttons.**

NOTE:
If "DIRECT REC" on the OPTION setting screen is set to [ON], the input signal is fixed to "AV", and the Channel up and down keys are not effective.

3. **Disconnect the AC plug for few seconds and connect it again, and press POWER button for turning the power to on from off to carry out the "Plug in Auto Tuner Preset".**
4. **Since other than the channels that can be stored by "Auto Tuning" operation are not available yet, preset manually by consulting the note of its available TV channels of which you took before.**

NOTE:
The Factory shipping condition of OSD setting is not restored by above operation.

5. **Change the OSD setting to the Factory shipping condition if necessary, by referring to Option Setting on the Operating Instructions as shown in the following chart.**

EXAMPLE:

OPTION	
TAPE SELECT	[AUTO]
NTSC INPUT SELECT	[AUTO]
NTSC PB SELECT	[on PAL TV]
JET NAVIGATOR	[OFF]
DELETE NAVIDATA	[NO]
OSD REC	[OFF]
OSD	[AUTO]
SELECT:	END: MENU

STEP5.COMPATIBILITY ADJUSTMENT
Refer to the Electrical Adjustment Procedures.

2.2. CAUTION FOR AC MAINS LEAD (NV-MV20GH)

2.3. HOW TO REPLACE THE LITHIUM BATTERY

2.3.1. GENERAL DESCRIPTION

There is a RAM in the IC6001, which is backing up the following data by using the power source of B7751 (Back-up Battery) and C7752 (Back-up Capacitor: Back-up time is approximately 30 minutes).

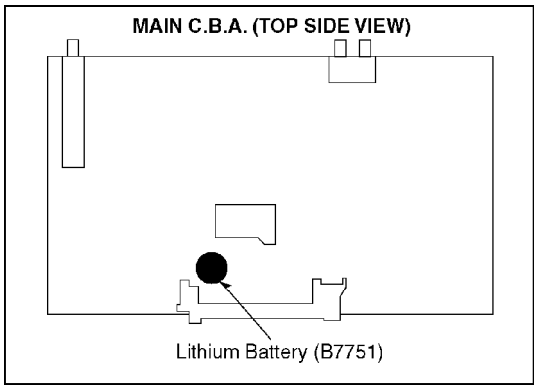
1. **Programme Navigation Data**
2. **TV Tuning Data**
3. **PG Shifter Adjustment Data**
4. **Option Setting Data**

2.3.2. REPLACEMENT PROCEDURE

NOTE:
This work should be finished within 30 minutes so that the RAM data would not be lost as running out of current from the Back-up Capacitor C7752.

1. **Remove the Top Panel and Mechanism unit with Main C.B.A by referring to the Disassembling Procedure.**
2. **Unsolder the Lithium Battery: B7751 and then replace it with a new one (See Fig. B1).**

Fig. B1



NOTE:
The lithium battery is a critical component (Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's instructions.

PRECAUTION
Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT
Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

2.4. SERVICE CAUTION-2

2.4.1. CAUTION FOR AUTO TUNING

PROCEDURE

Auto Tuning will start by the following procedure.

1. **Connect the DIN-RF Cable.**
2. **Connect the AC Mains Lead.**
3. **Turn on the VCR.**
   Auto Tuning will start.
   Auto Tuning search for TV stations from VHS minimum to UHF maximum and memorizes every tuned program position. Other program positions are skipped.
   Auto Tuning takes five or more minutes to complete its search.
   Do not touch the VCR during Auto Tuning.
   Auto Tuning will stop halfway, if the VCR is operated or the aerial lead and/or the mains lead are disconnected.
   In case the VCR stopped during Auto Tuning, the VCR has to be reset and restarted. See the following item 2.

NOTE:

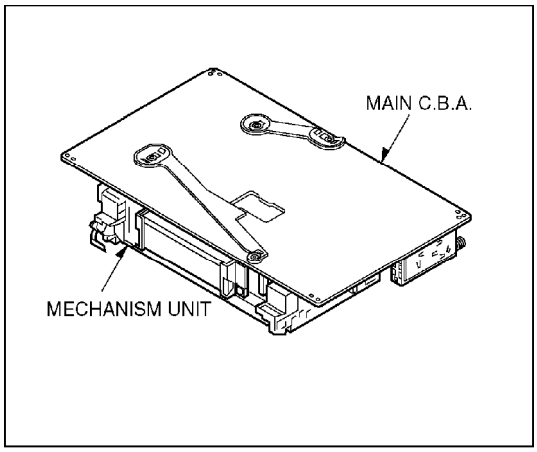
1. **If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto tuning.**
2. **When Auto Tuning is canceled halfway, Auto Tuning is not execute even if the VCR is turned off and then turned on again, In this case, Auto Tuning has to be restarted by the following procedures.**
   A. Press EJECT and remove the Videocassette.
   B. Keep UP and DOWN on the VCR pressed simultaneously for 3 seconds or more during the VCR on.
   The channel displayed on the VCR display disappears for moment then changes to 2.
   C. Turn off the VCR and then turn it on. Auto Tuning commences.
3. **If you turn the VCR off during Auto Tuning, Auto Tuning will stop halfway.**
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.

4. If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.
5. To cancel Auto Tuning Mid-operation, press POWER During Auto Tuning (The VCR is turned off).
6. When the VCR is moved to the other area or country, TV broadcasts should be stored again.

2.4.2. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame. Turn the MAIN C.B.A. over as shown in Fig. S1 .

Fig. S1



2.4.3. REMOVAL OF CASSETTE TAPE

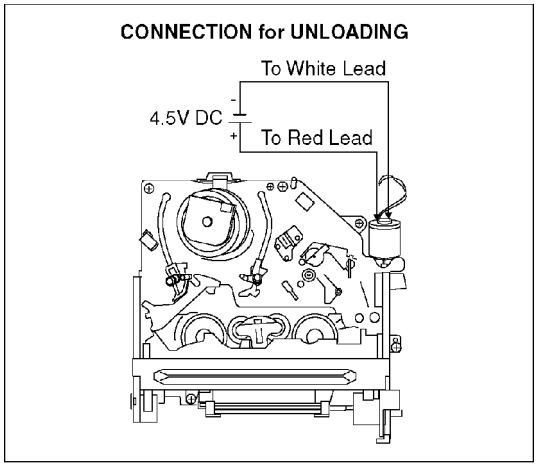
When the cassette tape could not be uninstalled from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.
   A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.
   B. Press STOP button in order to unload the mechanism. (Pay attention to tape slack)
   Service Mode Indication:
   7 ** ** (STOP) → 7 0L ** (EJECT)
2. Removal by manual operation by rotating the Loading Motor with the batteries.
   A. Disconnect the AC plug, and remove the Top Panel and the

Front Panel by referring to the Disassembly Procedures.

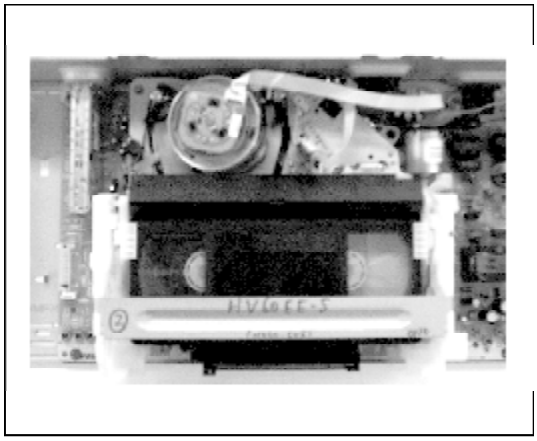
B. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor as shown in Fig. S2 .

Fig. S2



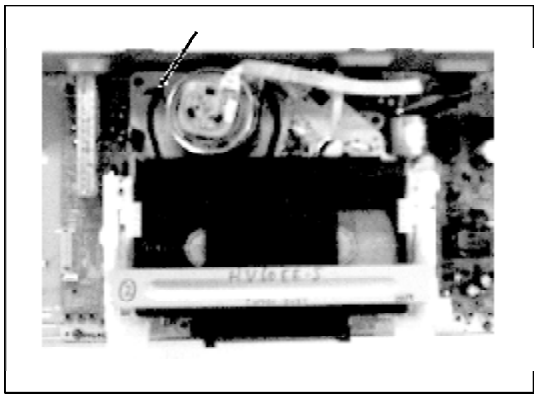
C. Stop unloading just before unloading would be completed as shown in Fig. S3 .

Fig. S3



D. Then the tape becomes slack as shown in Fig. S4 .

Fig. S4



E. Rotate the S-Reel by a small minus screwdriver (Fig. S5) to remove the slack tape as shown in Fig. S6 .

Fig. S5

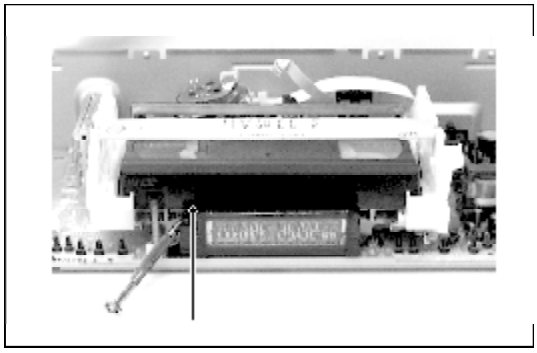
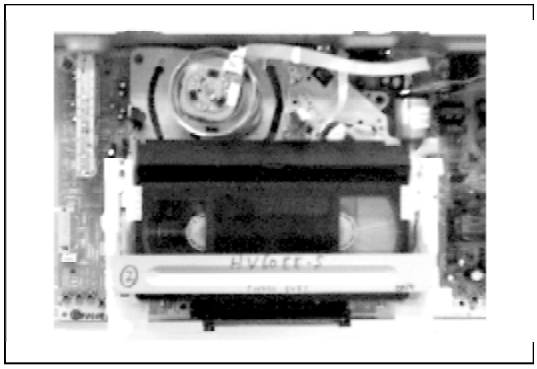
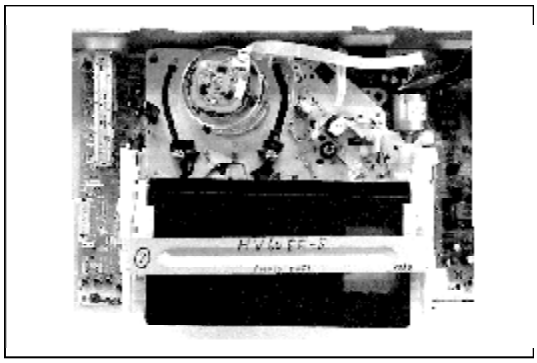


Fig. S6



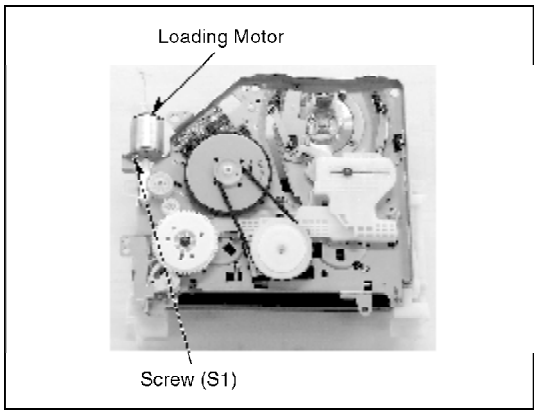
F. Then unload again to remove the cassette tape as shown in Fig. S7 .

Fig. S7



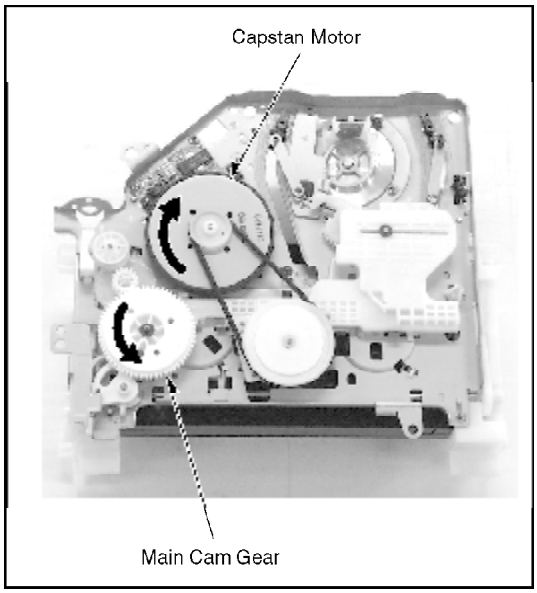
3. Removal by manual operations after uninstalling the mechanism, refer to the DISASSEMBLY METHOD of item 3.1..
   A. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring to the Disassembly Procedures.
   B. Remove the Screw (S1) and remove the Loading Motor both as shown in Fig. S8 .

Fig. S8



   C. Rotate the Main Cam Gear counter-clockwise (Fig. S9) until just before the unloading would be completed as shown in Fig. S3 .
   D. Rotate the Capstan Motor clockwise (Fig. S9) to remove the slack tape as shown in Fig. S6 .

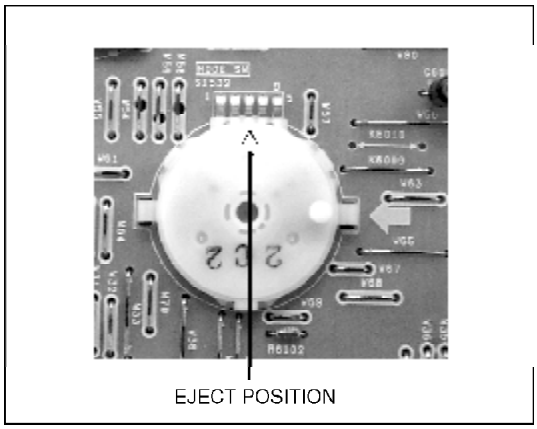
Fig. S9



E. Rotate the Main Cam Gear counter-clockwise again (Fig. S9) to remove the cassette-tape as shown in Fig. S7 .

F. Set the Position Switch to EJECT POSITION certainly as shown in Fig. S10 .

Fig. S10



G. Install the Loading Motor and tighten screw (S1) as shown in Fig. S8 .

2.4.4. CYLINDER UNIT REPLACEMENT

NOTE:
Replacing only Upper Cylinder unit of R4 Mechanism cannot be performed, as securing of RT gap is impossible out of factory, please replace the cylinder by whole Cylinder Unit. The Compatibility Adjustment should be performed after replacement ofthe DD Cylinder Unit.

1. Remove the Mechanism Unit from Main C.B.A./Chassis by referring to "Disassembly Procedure".

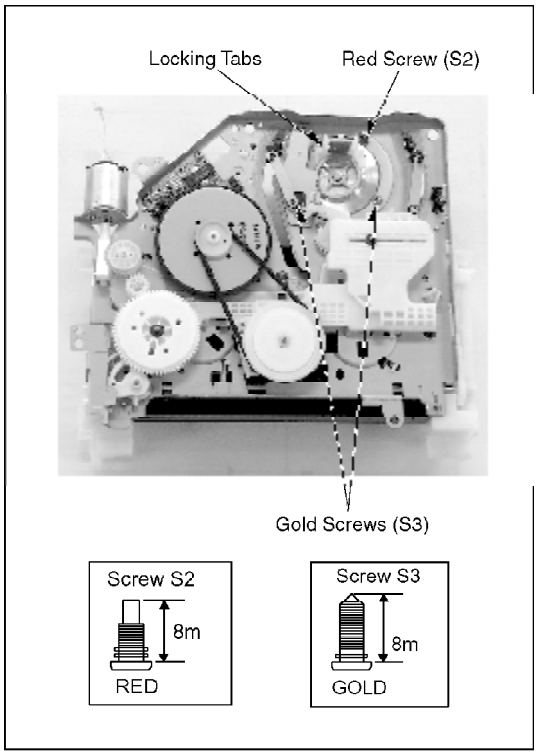
2. Unlock 2 locking tabs on a side to release the Cylinder Flexible Card as shown in Fig. S11 .

CAUTION:

Handle the Cylinder Flexible Card with care. When it damaged, you should replace it with a new Cylinder Unit.

3. Remove a red Screw (S2) and 2 gold Screws (S3) to remove the Cylinder Unit shown in Fig. S11 .

Fig. S11



NOTE:

When reassembling, perform the steps in the reverse order, and perform the COMPATIBILITY ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

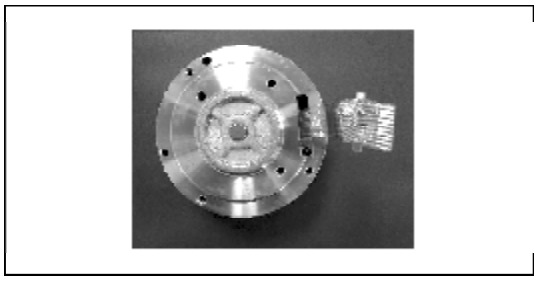
2.4.5. ATTENTION FOR REPLACING THE DD CYLINDER

When replace the DD Cylinder Unit, keep next procedure.

1. Put the gloves on your hands.

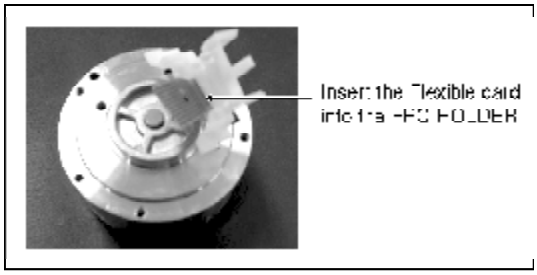
2. Turn the DD Cylinder Unit over.

Fig. S12



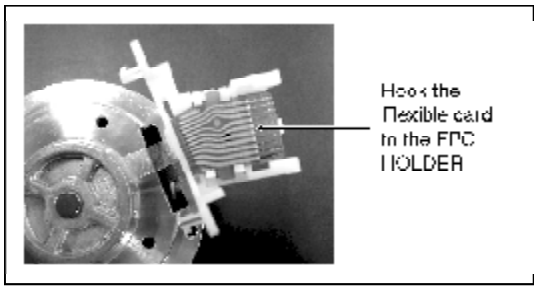
3. Insert the Flexible card into the FPC HOLDER.

Fig. S13



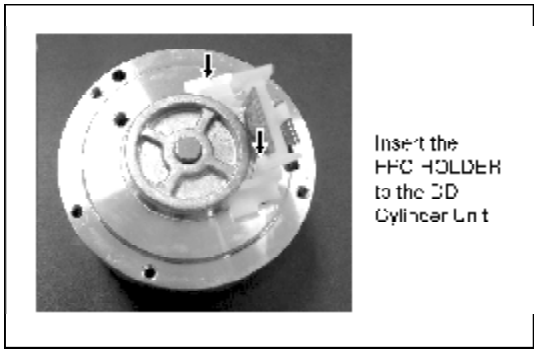
4. Hook the Flexible card to the FPC HOLDER.

Fig. S14



5. Insert the FPC HOLDER to the DD Cylinder Unit.

Fig. S15

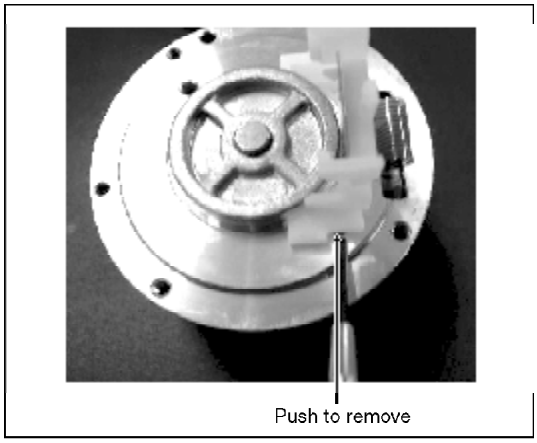


6. The "COMPATIBILITY ADJUSTMENT" should be performed after

the replacement of the DD Cylinder Unit.

NOTE:
In case that you have inserted the FPC HOLDER to the DD Cylinder Unit before inserting the Flexible card into the FPC HOLDER. Pushing stopper portion of the FPC HOLDER with a small minus screw driver and so on, remove the FPC HOLDER while payingattention for not to scratch the DD Cylinder and not to break the Head Chip as shown below.

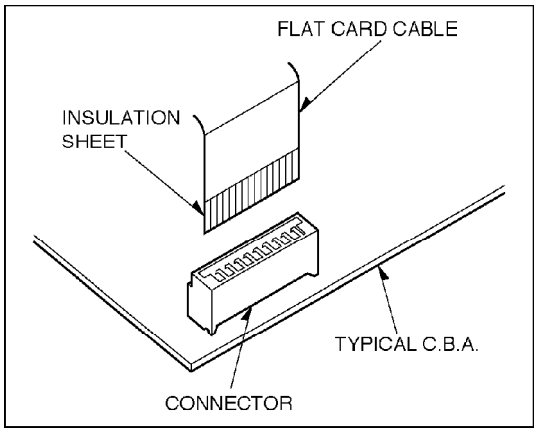
Fig. S16



2.4.6. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

Fig. S17



2.5. SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY

Refer to the Service Manual for R4 Mechanism Chassis.
(Order No.: VRD0202010C8).

2.6. INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [

for end users] for all VHS/S-VHS VCP and VCR.

2. **These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.**
3. **These improve the efficiency of video head cleaning service and shortening cleaning time for end users.**

VFK0923FT (For Service usage)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	20 m
Usability in a Path	180 Times

VFK0823FSE (For end users)	
Type of Cassette	Full VHS Cassette
Cleaning Time	10 Seconds/Time
Tape Length	3.34 m
Usability in a Path	30 Times

VFK0823FSE (For end users)

Note:

The tape material itself is the same in both types.

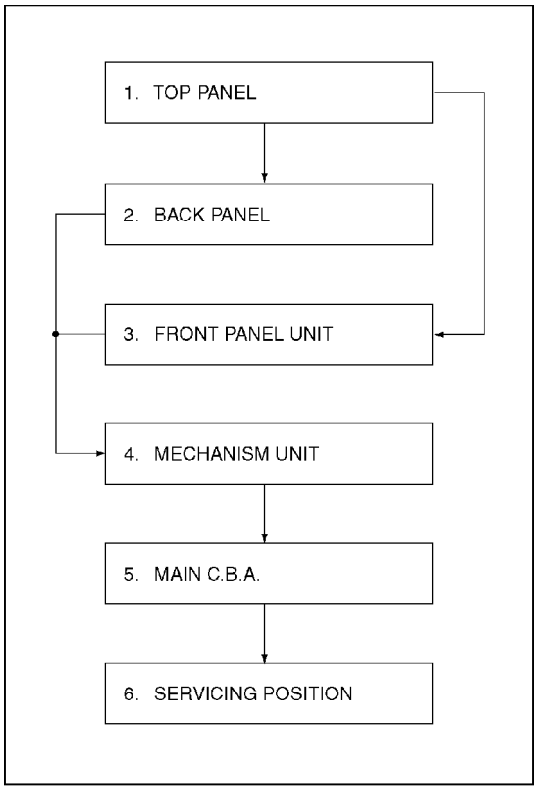
3. ADJUSTMENT PROCEDURES

3.1. DISASSEMBLY METHOD

3.1.1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.

Fig. D1

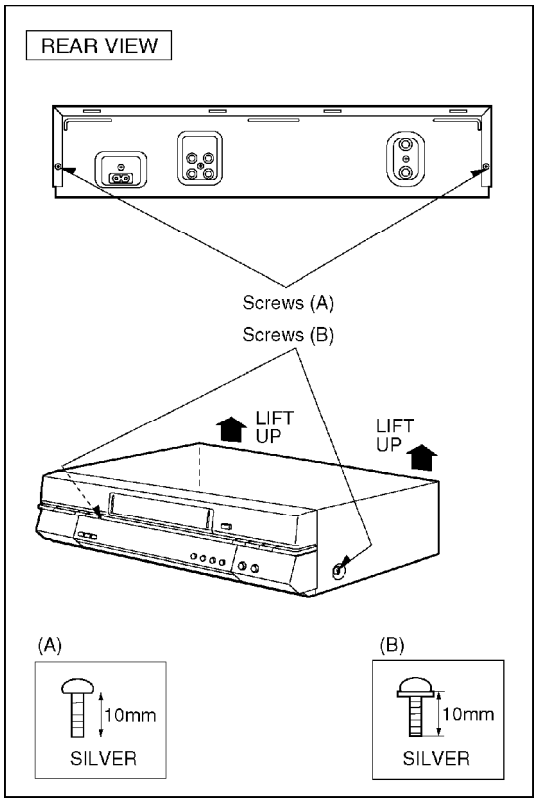


3.1.2. DETAIL OF DISASSEMBLY METHOD

1. REMOVAL OF THE TOP PANEL

Remove	**2 Screws (A)**
Remove	**2 Screws (B)**

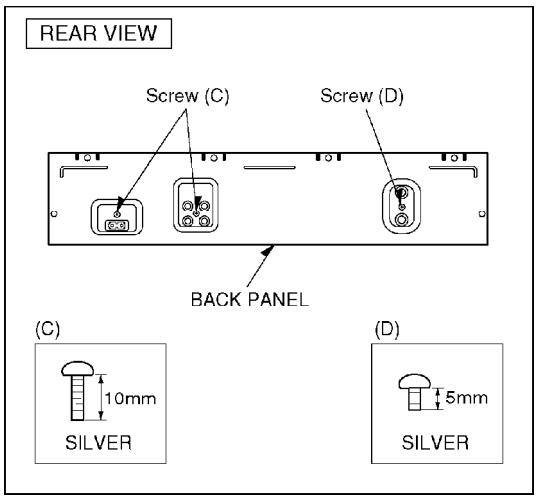
Fig.D2



2. REMOVAL OF THE BACK PANEL

Remove	**2 Screws (C)**
Remove	**Screw (D)**

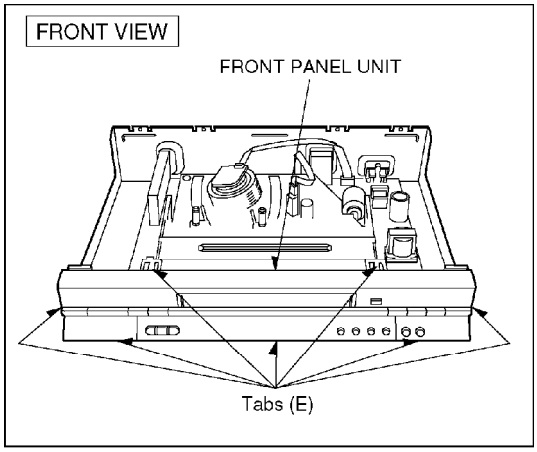
Fig. D3



3. REMOVAL OF THE FRONT PANEL UNIT

Unlock	**7 Tabs (E)**

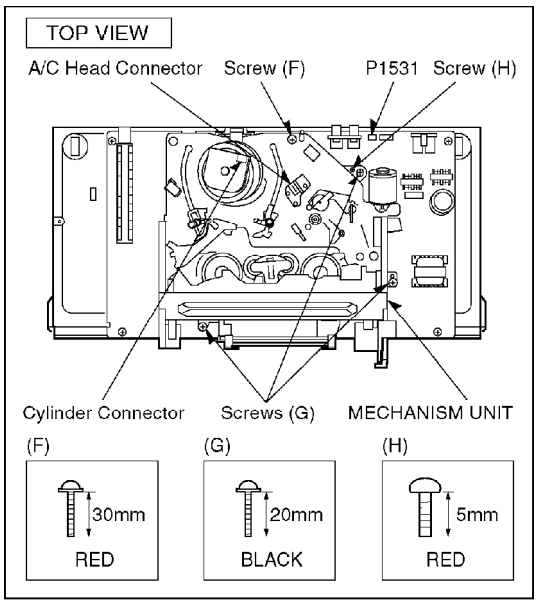
Fig. D4



4. REMOVAL OF THE MECHANISM UNIT

Remove	**Screw (F)**
Remove	**3 Screws (G)**
Remove	**Screw (H)**
Disconnect	**Cylinder Connector**
Disconnect	**A/C Head Connector**
Disconnect	**P1531**

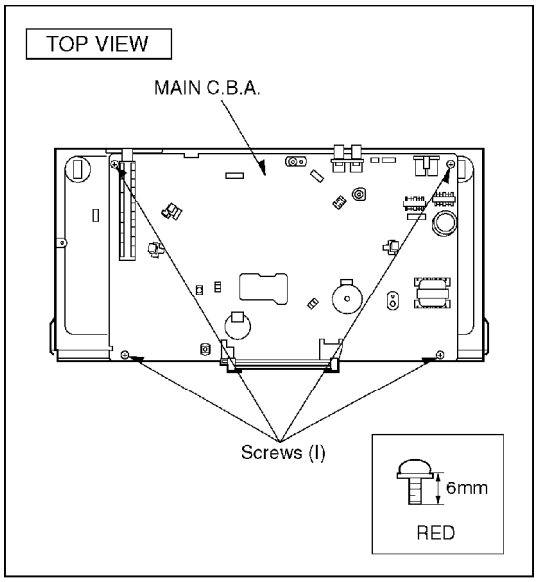
Fig. D5



5. REMOVAL OF THE MAIN C.B.A.

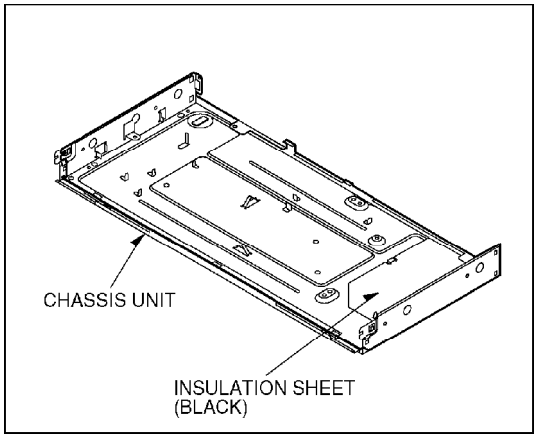
Remove	**4 Screws (I)**

Fig. D6



NOTE:
Before mounting the MAIN C.B.A. onto the frame, be sure to confirm that the insulation sheet is mounted on the frame as shown in Fig. D7 .

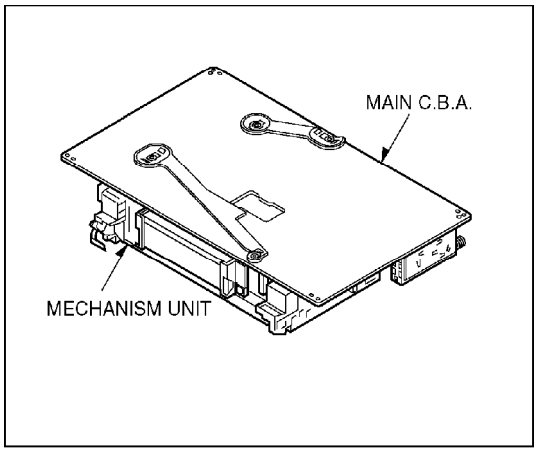
Fig. D7



6. SERVICING POSITION

Install the Mechanism Unit on to the MAIN C.B.A..
Then fix a screw (H), and connect two frexible card Connectors (Cylinder connector, AC Head connector) and P1531 as shown in Fig. D5 .

Fig. D8



3.2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the Service Manual for R4-Mechanism Chassis.
(Order No. VRD0202010C8)

3.3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCR.

3.3.1. TEST EQUIPMENT

To perform electrical adjustments following equipment is required.

1. VHS Alignment Tape. (VFJ8125H3F)
2. Monitor

3.3.2. SERVO SECTION

PG SHIFTER ADJUSTMENT

	PROCEDURE	F.I.P. DISPLAY
1.	Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	
2.	Activate the Service Mode 2 While keep pressing FF key, press the EJECT key in twice.	
3.	Activate the Entering Mode. Press the EJECT key for more than 3 seconds.	
4.	Set the Mode 2. Press the CH UP key once.	
5.	Insert the alignment cassette tape (VFJ8125H3F) The PG Shifter Adjustment starts automatically.	

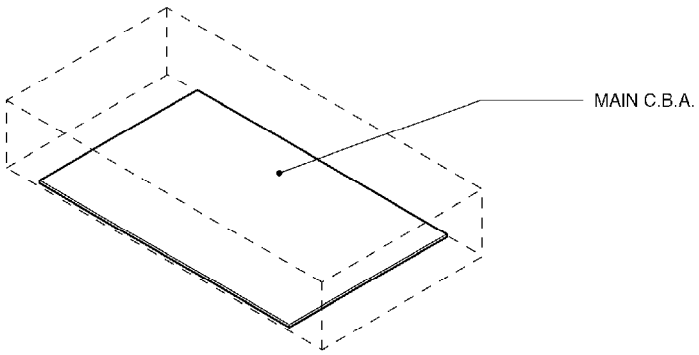
	PROCEDURE	F.I.P. DISPLAY
6.	When the sequence of the automatic adjustment has been terminated, the following action has been made. * SUCCEED: The cassette tape is ejected. * ERROR: The "F20", "F21", "F22" or "F23"is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.	
7.	Exit from Service Mode. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	**NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)**
F21	**NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)**
F22	**NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.**
F23	**NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)**

NOTE:
After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

3.3.3. CIRCUIT BOARD LAYOUT



4. ABBREVIATIONS

5. INPUT/OUTPUT CHART FOR IC6001

6. WAVEFORM TABLE & VOLTAGE CHART

6.1. WAVEFORM TABLE

6.2. VOLTAGE CHART

7. BLOCK DIAGRAMS

7.1. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

7.2. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

8. SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

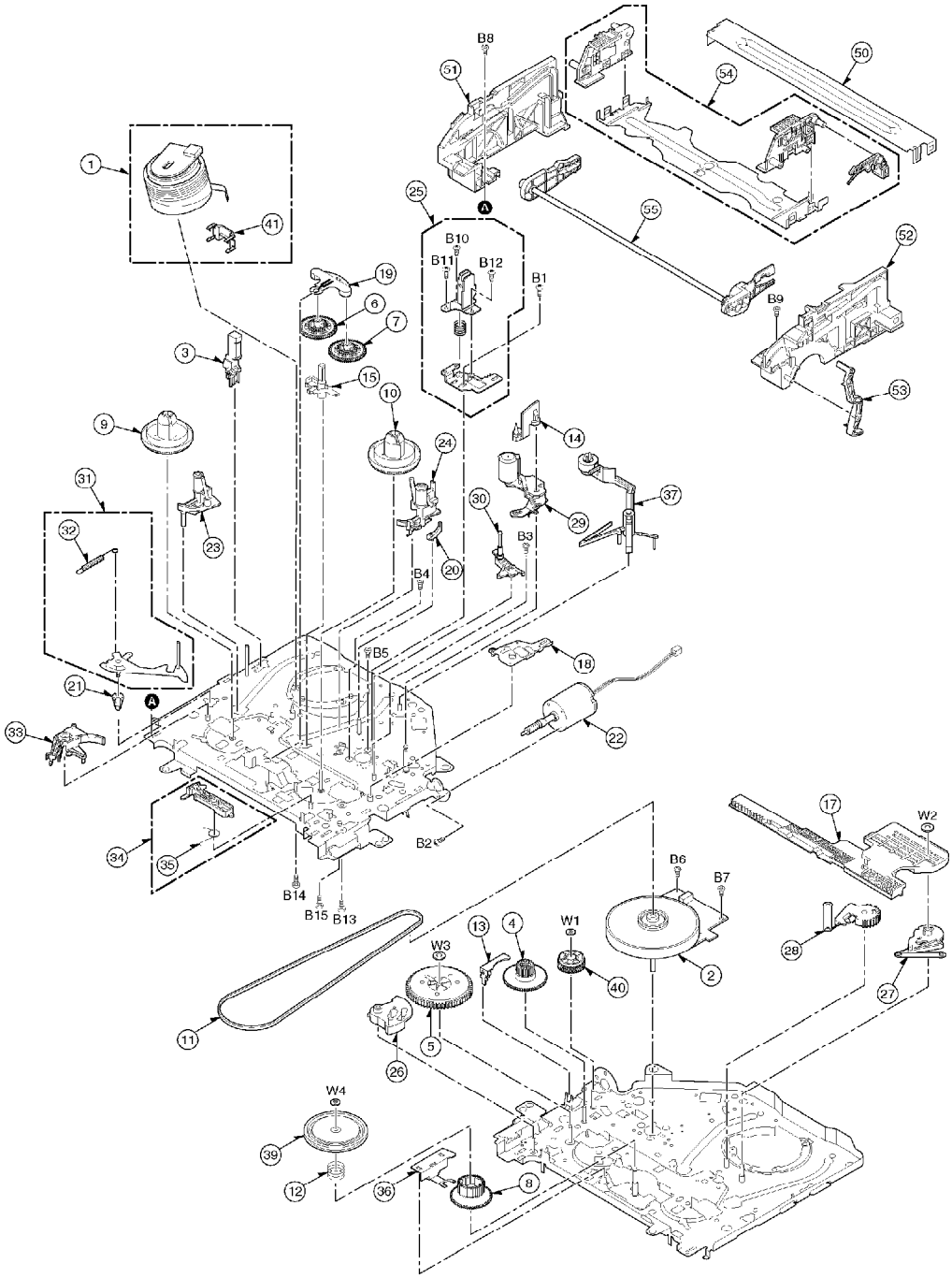
8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

9. CIRCUIT BOARD ASSEMBLIES

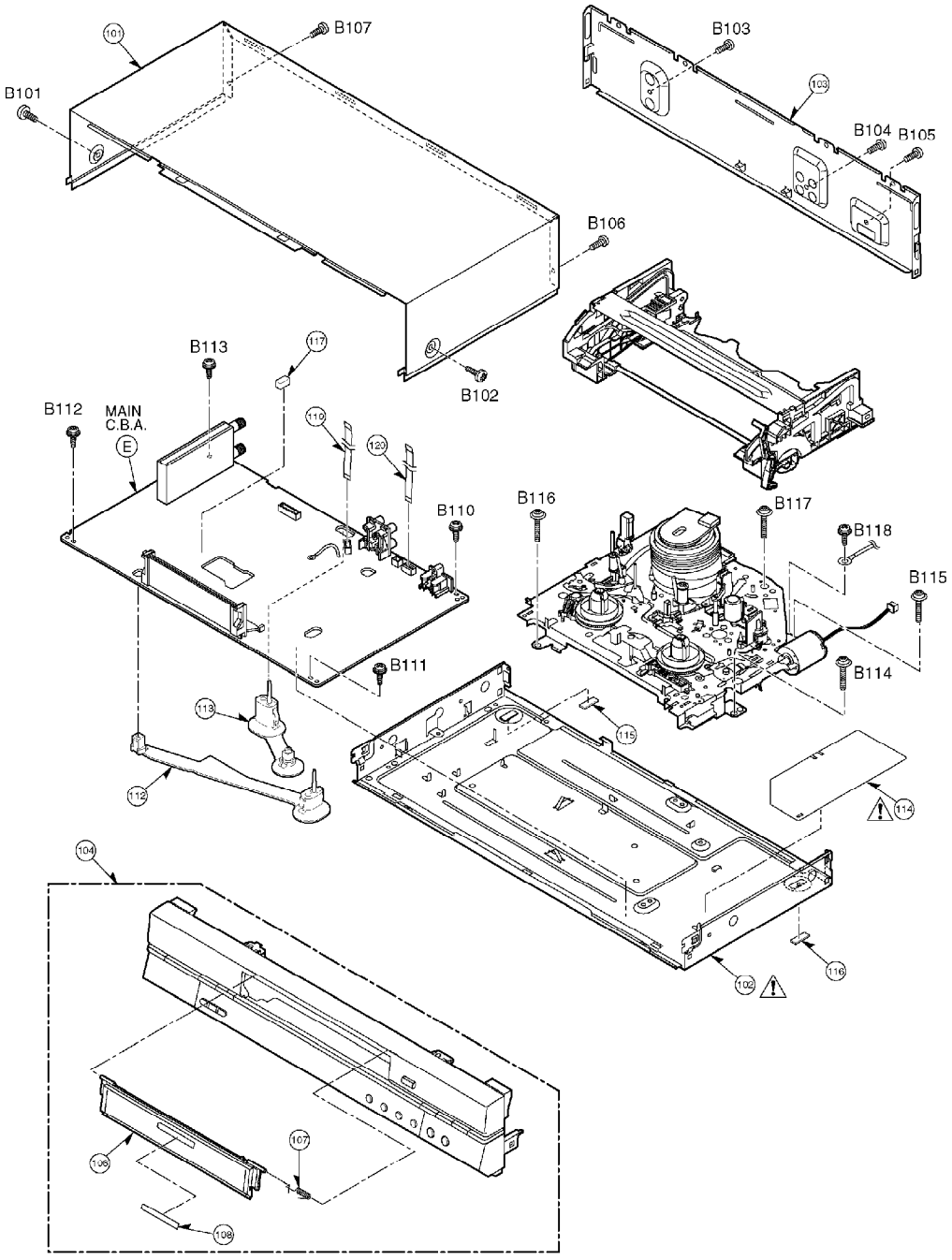
9.1. MAIN C.B.A.

10. EXPLODED VIEWS

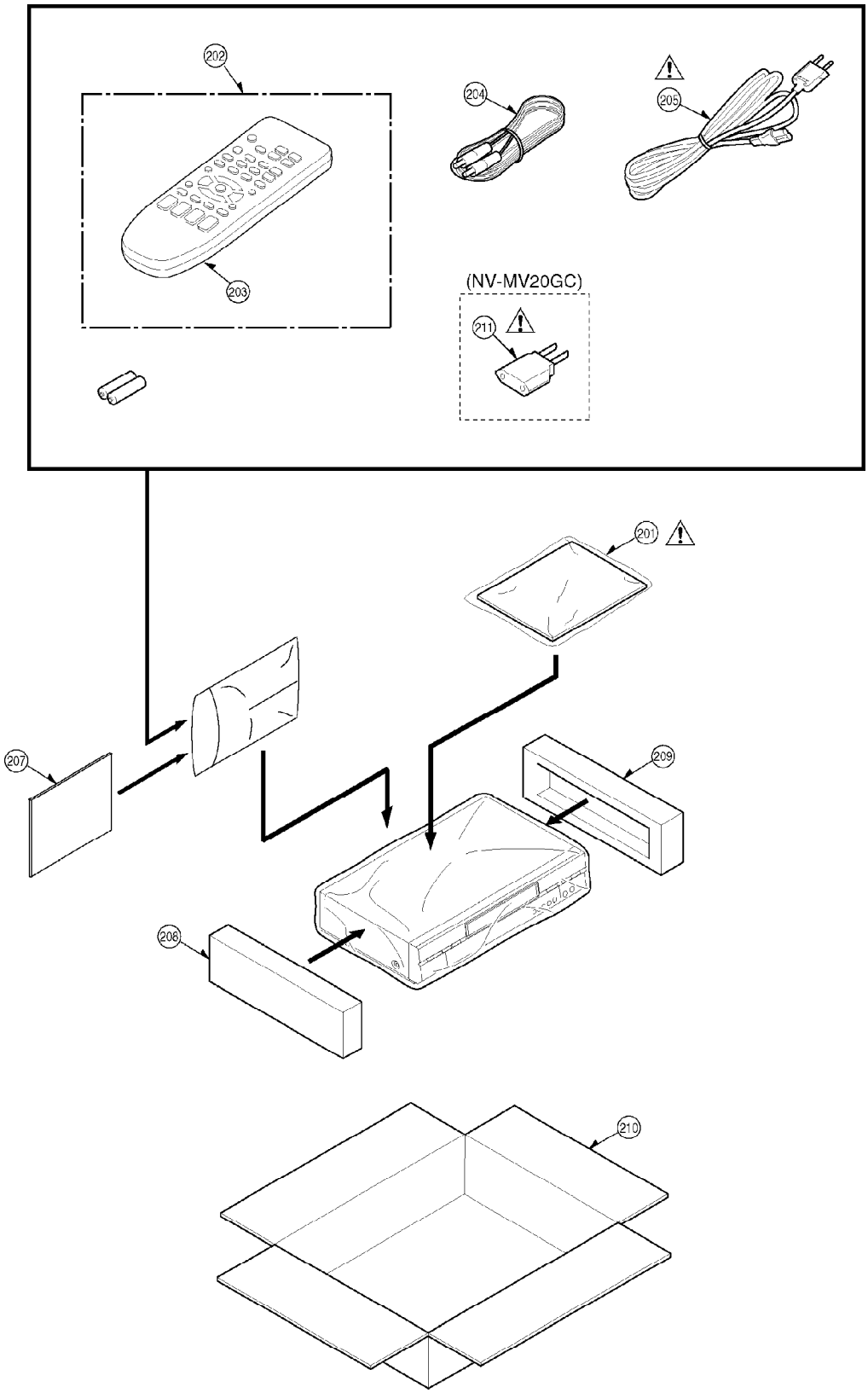
10.1. CHASSIS PARTS SECTION



10.2. CASING PARTS SECTION



10.3. PACKING PARTS SECTION



11. REPLACEMENT PARTS LIST

11.1. CHASSIS PARTS SECTION PARTS LIST

Note:
***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV. Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
1	VEG1616-DKIT	CYLINDER UNIT	
2	VEM0750	CAPSTAN UNIT	
3	L1AZ00000004	FE HEAD	
4	VDG1510	INTERMEDIATE GEAR	
5	VDG1511	MAIN CAM GEAR	
6	VDG1512	IDLER GEAR	
7	VDG1512	IDLER GEAR	
8	VDG1514	CHANGE GEAR	
9	VDR0372	REEL TABLE	
10	VDR0372	REEL TABLE	
11	VDV0391	CAPSTAN BELT	
12	VMB3550	CHANGE GEAR SPRING	
13	VMD4249	WORM SHAFT HOLDER	
14	VMD4252	OPENER PIECE	
15	VMD4253	LED PRISM	
17	VML3624	MAIN LEVER	
18	VML3626	PINCH CHARGE ARM	
19	VML3632	IDLER ARM	
20	VMX3092	P4 CAP	
21	VDB1431	TENSION ARM BOSH	
22	VEM0785	LOADING MOTOR UNIT	
23	VXA7105	SUPPLY SHAFT HOLDER UNIT	
24	VXA7106	TAKE UP SHAFT HOLDER UNIT	
25	VXA7107	AC HEAD UNIT	
26	VXA7311	SECTOR GEAR UNIT	
27	VXL3107	SUPPLY LOADING ARM UNIT	
28	VXL3108	TAKE UP LOADING ARM UNIT	
29	VXL3109	PINCH ARM UNIT	
30	VXL3110	P5 ARM UNIT	
31	VXL3111	TENSION ARM UNIT	
32	VMB3547	TENSION SPRING	
33	VXL3112	SUPPLY BRAKE ARM UNIT	
34	VXL3113	TAKE UP BRAKE ARM UNIT	
35	VMB3548	TAKE UP BRAKE SPRING	
36	VXL3124	CHANGE LEVER UNIT	
37	VXL3131	CLEANER ARM UNIT	
39	VXP2133	CENTRE CLUTCH UNIT	
40	VXP2168	TORQUE CLUTCH UNIT	
41	VMD4771	FLAT CABLE HOLDER	
50	VMA0L25	TOP PLATE	
51	VMD4255	SIDE PLATE (L)	
52	VMD4254	SIDE PLATE (R) UNIT	
53	VML3706	OPENER LEVER	

Ref. No.	Part No.	Part Name & Description	Remarks
54	VXA7110	CASSETTE HOLDER UNIT	
55	VXL3160	MAIN SHAFT UNIT	
B1	VHD1044	SCREW	
B2	XSN3+35	SCREW	
B3	XTN26+7J	SCREW	
B4	XTN26+7J	SCREW	
B5	XTN26+7J	SCREW	
B6	XTV26+5F	SCREW	
B7	XTV26+5F	SCREW	
B8	XTV26+8FR	SCREW	
B9	XTV26+8FR	SCREW	
B10	VHD1066	SCREW	
B11	VHD1066	SCREW	
B12	VHD1185	SCREW	
B13	VHD1095	SCREW	
B14	VHD1117	SCREW	
B15	VHD1117	SCREW	
W1	VMX2208	WASHER	
W2	VMX3114	WASHER	
W3	VMX2699	WASHER	
W4	VMX3196	WASHER	

11.2. CASING PARTS SECTION / PARTS LIST

Note:
***All parts except parts mentioned [SVC-SPC] in the Remarks column are supplied from MAV. Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
101	VGM1991	TOP PANEL	
102	VMP7569	CHASSIS FRAME	⚠
103	VMP7575	BACK PANEL	
104	VYP8719	FRONT PANEL (1) UNIT	NV-MV20GC/GCS/GM/EE/GCU/GCF/GH
104	VYP8718	FRONT PANEL (1) UNIT	NV-MV20GL
106	VKF3716	BLINDER PANEL	
107	VMB2521	BLINDER SPRING	
108	VGB0554	SUPER DRIVE BADGE	
112	VMX3115	MECHANISM SPACER (F)	
113	VMX3272	MECHANISM SPACER (R)	
114	VMZ3355	BARRIER	⚠
115	VKA0364	FOOT	
116	VKA0364	FOOT	
117	VMX3277	SPACER	
119	VWJ1652	FLAT CARD CABLE (6P)	P4002-AC HEAD
120	VWJ07OW200MM	FLAT CARD CABLE (7P)	P2501-CYLINDER
B101	XTW3+10TFC	SCREW	
B102	XTW3+10TFC	SCREW	
B103	XSB3+5FC	SCREW	
B104	XTB3+10JFC	SCREW	
B105	XTB3+10JFC	SCREW	
B106	XTB3+10JFC	SCREW	
B107	XTB3+10JFC	SCREW	
B110	XTW3+6TR	SCREW	
B111	XTW3+6TR	SCREW	
B112	XTW3+6TR	SCREW	
B113	XTW3+6TR	SCREW	
B114	VHD1453	SCREW	
B115	VHD1453	SCREW	
B116	VHD1453	SCREW	
B117	VHD1452	SCREW	
B118	XTV26+5FR	SCREW	

11.3. PACKING PARTS SECTION / PARTS LIST

Note:

***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV. Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
201	VQT0B41	OPERATING INSTRUCTIONS	⚠ NV-MV20GC/GCS
		(ENGLISH/ARABIC)	
201	VQT0C27	OPERATING INSTRUCTIONS	⚠ NV-MV20GM
		(ENGLISH)	
201	VQT0B34	OPERATING INSTRUCTIONS	⚠ NV-MV20GL
		(ENGLISH)	
201	VQT0B37	OPERATING INSTRUCTIONS	⚠ NV-MV20EE/GCU
		(ENGLISH/RUSSIAN)	
201	VQT0B36	OPERATING INSTRUCTIONS	⚠ NV-MV20GCF
		(ENGLISH)	
201	VQT0B39	OPERATING INSTRUCTIONS	⚠ NV-MV20GH
		(ENGLISH/CANTONESE)	
202	N2QAHB000032	REMOTE CONTROLLER	
203	R0185-720010	BATTERY COVER	
204	VJA1124	DIN RF CABLE	NV-MV20GC/GCS/GM/GL/GH
204	VJA1123	DIN RF CABLE	NV-MV20EE/GCU/GCF
205	RJA0019-2X	AC CORD	⚠ NV-MV20GC/GCS/GM/EE/GCU/GCF
205	RJA0035-2X	AC CORD	⚠ NV-MV20GL
205	RJA0053-3X	AC CORD	⚠ NV-MV20GH
207	VPN5766	ACCESSORY PAD	
208	VPN5970	CUSHION (L)	
209	VPN5971	CUSHION (R)	
210	VPG0R79	PACKING	NV-MV20GC
210	VPG0R84	PACKING	NV-MV20GCS
210	VPG0S67	PACKING	NV-MV20GM
210	VPG0R78	PACKING	NV-MV20GL
210	VPG0R81	PACKING	NV-MV20EE
210	VPG0R82	PACKING	NV-MV20GCU
210	VPG0R80	PACKING	NV-MV20GCF
210	VPG0R83	PACKING	NV-MV20GH
211	VJP2974-M	AC PLUG ADAPTER	⚠ NV-MV20GC
	----------	SERVICE FIXTURES & TOOLS	
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	PAVC-SPC
	VFK0335	RETAINING RING REMOVER	PAVC-SPC
		(3MM/4MM)	
	VFK0329	POST ADJUSTMENT	PAVC-SPC
		SCREWDRIVER	
	VFK0326	HEX WRENCH SET	PAVC-SPC
	VFK0132	BACK TENSION METER	PAVC-SPC
	VFK27	HEAD CLEANING STICK	PAVC-SPC
	VFK1024	MOLYTONE GREASE	PAVC-SPC
	VFK0330	FINE ADJUSTMENT GEAR	PAVC-SPC
		DRIVER	
	VFK1301	SILICONE GREASE	PAVC-SPC
	VFK1298A	FLOIL GREASE	PAVC-SPC

11.4. ELECTRICAL PARTS LIST

Note1:
***All parts except parts mentioned [AVC-SPC] in the Remarks column are supplied from MAV. Parts mentioned [AVC-SPC] are supplied from PAVC-CSG (AVC-SPC).**

Note2:
"*1", "*2", "*3", "*4", "*5" in the Remarks column shows the models as follows.
"*1" : NV-MV20EE-S
"*2" : NV-MV20GC-S/ GCS-S/ GM-S
"*3" : NV-MV20GCF-S/ GCU-S
"*4" : NV-MV20GH-S
"*5" : NV-MV20GL-S

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified.
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Remarks
■	VEP06F33R	MAIN C.B.A.	(RTL) *1
■	VEP06F33P	MAIN C.B.A.	(RTL) *2
■	VEP06F33S	MAIN C.B.A.	(RTL) *3
■	VEP06F33T	MAIN C.B.A.	(RTL) *4
■	VEP06F33Q	MAIN C.B.A.	(RTL) *5
■	VEP06F33R	MAIN C.B.A.	(RTL) *1
■	VEP06F33P	MAIN C.B.A.	(RTL) *2
■	VEP06F33S	MAIN C.B.A.	(RTL) *3
■	VEP06F33T	MAIN C.B.A.	(RTL) *4
■	VEP06F33Q	MAIN C.B.A.	(RTL) *5
B7751	VSB0205	LITHIUM BATTERY	⚠
C1121	ECQU2A683MVA	P.CAPACITOR	⚠ *1,*3,*4,*5
C1121	ECQU2A333MVA	P.CAPACITOR	⚠ *2
C1122	F1BAF331A013	C.CAPACITOR	⚠

Ref. No.	Part No.	Part Name & Description	Remarks
C1123	F1BAF1020020	C.CAPACITOR	⚠
C1143	ECEC2GG680FZ	E.CAPACITOR	
C1151	ECQB1H473JF3	P.CAPACITOR	
C1152	ECQB1H103JF3	P.CAPACITOR	
C1153	ECQB1H104JM3	P.CAPACITOR	
C1154	ECQB1H223JM3	P.CAPACITOR	
C1155	F1A3A271A028	C.CAPACITOR	
C1200	ECQB1H104JM3	P.CAPACITOR	
C1210	F1B3A332A004	C.CAPACITOR	
C1230	EEUFG1H560B	E.CAPACITOR	
C1250	F2A1C6810023	E.CAPACITOR	
C1251	ECA1CM470B	E.CAPACITOR	
C1260	F2A1A1020056	E.CAPACITOR	
C1261	ECA1AM101B	E.CAPACITOR	
C1270	EEUFG1H560B	E.CAPACITOR	
C1280	EEUFG1A101B	E.CAPACITOR	
C1341	F1H1H103A730	C.CAPACITOR	
C1351	F1H1H103A730	C.CAPACITOR	
C1352	ECEA0JKA470B	E.CAPACITOR	
C2001	ECJ1VC1H330J	C.CAPACITOR CHIP	
C2003	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C2051	ECEA0JKN220B	E.CAPACITOR	
C2053	ECEA1CKA100B	E.CAPACITOR	
C2054	ECJ1VB1H392K	C.CAPACITOR CHIP	
C2055	ECUV1C104ZFV	C.CAPACITOR CHIP	
C2099	ECJ1VC1H681J	C.CAPACITOR CHIP	
C2501	ECUV1C104ZFV	C.CAPACITOR CHIP	
C2502	ECEA0JKA221B	E.CAPACITOR	
C2504	F1H1E223A064	C.CAPACITOR	
C2505	F1H1E223A064	C.CAPACITOR	
C2506	F1H1A224A025	C.CAPACITOR	
C2507	ECJ1VB1H102K	C.CAPACITOR CHIP	
C2508	ECJ1VB1H182K	C.CAPACITOR CHIP	
C2509	ECEA1CKA220B	E.CAPACITOR	
C2510	F1H1C104A065	C.CAPACITOR	
C2511	F1H1C104A065	C.CAPACITOR	
C2512	F1H1C104A065	C.CAPACITOR	
C2513	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C2515	F1H1H103A730	C.CAPACITOR	
C2518	ECJ1VB1H102K	C.CAPACITOR CHIP	
C2519	F1H1H103A730	C.CAPACITOR	
C2520	F1H1C104A065	C.CAPACITOR	
C2551	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2552	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2561	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2562	ECJ1VB1C563K	C.CAPACITOR CHIP	
C2571	ECA1EM221B	E.CAPACITOR	
C3002	F1H1C104A065	C.CAPACITOR	
C3003	F1H1C104A065	C.CAPACITOR	
C3004	ECJ1VC1H151J	C.CAPACITOR CHIP	
C3005	F1H1C104A065	C.CAPACITOR	
C3006	F1J1C105A112	C.CAPACITOR	
C3007	F1H1H390A765	C.CAPACITOR	
C3008	ECEA1HKA4R7B	E.CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C3010	F1J1C105A112	C.CAPACITOR	
C3011	ECEA0JKA470B	E.CAPACITOR	
C3012	F1H1A224A025	C.CAPACITOR	
C3013	F1H1C104A065	C.CAPACITOR	
C3015	F1H1C104A065	C.CAPACITOR	
C3016	F1H1A105A025	C.CAPACITOR	
C3017	F1H1C104A065	C.CAPACITOR	
C3019	F1H1C104A065	C.CAPACITOR	
C3020	ECEA1EKA3R3B	E.CAPACITOR	
C3021	ECEA1CKA100B	E.CAPACITOR	
C3022	F1H1H103A748	C.CAPACITOR	
C3025	ECJ1VC1H331J	C.CAPACITOR CHIP	
C3027	ECJ2VB1H103K	C.CAPACITOR CHIP	
C3029	F1H1H103A730	C.CAPACITOR	
C3030	F1H1H103A730	C.CAPACITOR	
C3031	F1H1A224A025	C.CAPACITOR	
C3032	ECEA0JKA470B	E.CAPACITOR	
C3033	F1J1C105A112	C.CAPACITOR	
C3034	ECJ1VC1H020C	C.CAPACITOR CHIP	
C3035	F1H1C104A065	C.CAPACITOR	
C3036	ECEA1EKA3R3B	E.CAPACITOR	
C3037	ECEA1HKA2R2B	E.CAPACITOR	
C3038	ECJ1VB1H472K	C.CAPACITOR CHIP	
C3039	F1H1H103A748	C.CAPACITOR	
C3040	F1H1A474A025	C.CAPACITOR	
C3041	F1H1E223A064	C.CAPACITOR	
C3042	ECEA1EKA4R7B	E.CAPACITOR	
C3046	ECEA1HKA010B	E.CAPACITOR	*1,*2,*3,*4
C3047	ECUV1C104ZFV	C.CAPACITOR CHIP	
C3048	F1H1C104A065	C.CAPACITOR	
C3049	F1H1C104A065	C.CAPACITOR	
C3050	ECEA1CKA470B	E.CAPACITOR	
C3051	ECA0JM471B	E.CAPACITOR	
C3052	F1H1C104A065	C.CAPACITOR	
C3053	ECEA1CKA100B	E.CAPACITOR	
C3059	ECJ1VB1H102K	C.CAPACITOR CHIP	
C3062	ECEA1CKA100B	E.CAPACITOR	
C3064	F1J1C105A112	C.CAPACITOR	
C3065	F1H1C104A065	C.CAPACITOR	
C3066	F1H1C104A065	C.CAPACITOR	
C4010	ECEA1CKA100B	E.CAPACITOR	
C4011	----------	WIRE CABLE	
C4016	ECJ1VC1H150J	C.CAPACITOR CHIP	*1,*3
C4018	ECEA0JKA220B	E.CAPACITOR	
C4041	ECEA1EKA4R7B	E.CAPACITOR	
C4042	ECEA1EKA4R7B	E.CAPACITOR	
C4051	ECEA0JKA221B	E.CAPACITOR	*1,*3
C4052	ECUV1C104ZFV	C.CAPACITOR CHIP	*1,*3
C4053	ECJ1VB1H102K	C.CAPACITOR CHIP	*1,*3
C4061	F1H1H103A748	C.CAPACITOR	
C4062	ECEA0JKA330B	E.CAPACITOR	
C4063	ECEA1HKA3R3B	E.CAPACITOR	
C4064	ECJ1VB1H182K	C.CAPACITOR CHIP	
C4065	ECJ1VB1H182K	C.CAPACITOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
C4066	F1H1H222A219	C.CAPACITOR	
C4075	ECJ1VC1H471J	C.CAPACITOR CHIP	
C4079	ECJ1VC1H471J	C.CAPACITOR CHIP	*1,*3
C4081	ECQB1H223JM3	P.CAPACITOR	
C4082	ECJ1VB1H471K	C.CAPACITOR CHIP	
C4083	ECEA0JKA221B	E.CAPACITOR	
C4084	ECJ2VB1H182K	C.CAPACITOR CHIP	
C4085	F1H1E223A064	C.CAPACITOR	
C4086	ECEA0JKA470B	E.CAPACITOR	
C4583	F1H1H103A730	C.CAPACITOR	
C4601	ECEA1CKA100B	E.CAPACITOR	
C4603	ECJ1VB1H682K	C.CAPACITOR CHIP	
C5003	F1H1H103A748	C.CAPACITOR	
C5004	F1H1H103A748	C.CAPACITOR	
C5005	ECEA0JKA101B	E.CAPACITOR	
C5006	F1H1C104A065	C.CAPACITOR	
C6001	F1H1H180A765	C.CAPACITOR	
C6002	F1H1H220A230	C.CAPACITOR	
C6003	F1H1H150A765	C.CAPACITOR	
C6004	ECJ1VC1H220J	C.CAPACITOR CHIP	
C6005	ECEA1HKA3R3B	E.CAPACITOR	
C6006	ECJ1VC1H101J	C.CAPACITOR CHIP	
C6007	ECJ1VC1H820J	C.CAPACITOR CHIP	
C6008	ECJ1VC1H471J	C.CAPACITOR CHIP	
C6009	F1H1H103A730	C.CAPACITOR	
C6010	F1H1H103A730	C.CAPACITOR	
C6011	F1H1H103A730	C.CAPACITOR	
C6013	ECJ1VF1A105Z	C.CAPACITOR CHIP	
C6014	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6015	ECJ1VB1C333K	C.CAPACITOR CHIP	
C6016	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6017	ECJ1VC1H471J	C.CAPACITOR CHIP	*1,*2,*3,*5
C6017	ECJ1VC1H681J	C.CAPACITOR CHIP	*4
C6020	ECJ1VB1H102K	C.CAPACITOR CHIP	
C6021	F1H1H103A730	C.CAPACITOR	
C6022	F1H1H103A730	C.CAPACITOR	
C6101	F1J1H104A610	C.CAPACITOR	
C6102	F1H1H103A730	C.CAPACITOR	
C6103	F1H1H103A730	C.CAPACITOR	
C6109	ECUV1C104ZFV	C.CAPACITOR CHIP	
C6111	ECUV1C104ZFV	C.CAPACITOR CHIP	
C6112	ECJ1VC1H330J	C.CAPACITOR CHIP	
C6113	ECJ1VC1H330J	C.CAPACITOR CHIP	
C6301	F1H1H103A730	C.CAPACITOR	
C6302	F1H1H103A730	C.CAPACITOR	
C6303	ECEA0JKA470B	E.CAPACITOR	
C6305	ECEA1EKA4R7B	E.CAPACITOR	
C6307	F1H1H103A730	C.CAPACITOR	
C6308	ECEA0JKA470B	E.CAPACITOR	
C6309	ECEA0JKA470B	E.CAPACITOR	
C6310	F1H1H103A730	C.CAPACITOR	
C7501	ECEA1VKA100B	E.CAPACITOR	
C7502	ECJ1VC1H100D	C.CAPACITOR CHIP	
C7505	ECEA0JKA101B	E.CAPACITOR	

Ref. No.	Part No.	Part Name & Description	Remarks
C7506	ECUV1C104ZFV	C.CAPACITOR CHIP	
C7601	ECEA1HKA010B	E.CAPACITOR	
C7603	F1H1H103A730	C.CAPACITOR	
C7605	ECEA0JKA470B	E.CAPACITOR	
C7608	F1H1H103A730	C.CAPACITOR	
C7610	ECJ1VB1H102K	C.CAPACITOR CHIP	
C7616	ECEA0JKA470B	E.CAPACITOR	
C7617	F1H1H103A730	C.CAPACITOR	
C7618	ECEA0JKA470B	E.CAPACITOR	
C7619	F1H1H103A730	C.CAPACITOR	
C7621	ECJ1VB1H471K	C.CAPACITOR CHIP	
C7622	ECJ1VB1H471K	C.CAPACITOR CHIP	
C7623	F1H1H103A730	C.CAPACITOR	
C7709	ECJ1VB1H182K	C.CAPACITOR CHIP	*1,*2,*3,*5
C7709	F1H1H152A219	C.CAPACITOR	*4
C7714	ECJ1VC1H101J	C.CAPACITOR CHIP	*1,*2,*3,*4
C7752	ECEA0JKA331Q	E.CAPACITOR	
D1110	ERZVA5Z471	TRANSIENT/SURGE ABSORBER	⚠
D1140	B0KB00000013	DIODE	
D1151	B0HAGM000006	DIODE	
D1152	MA2C18500E	DIODE	⚠
D1155	MA2C165001VT	DIODE	
D1157	MAZ40270LF	DIODE	
D1180	MA7510-TR	DIODE	
D1230	MA2C18500E	DIODE	⚠
D1250	B0JAMK000015	DIODE	
D1251	B0JAMK000015	DIODE	
D1260	B0JAME000025	DIODE	⚠
D1261	B0JAME000025	DIODE	⚠
D1270	MA2C18500E	DIODE	⚠
D1280	B0JAME000025	DIODE	⚠
D1351	MAZ4056NHF	DIODE	
D1501	B3EA00000072	LED	
D2001	MA2C165001VT	DIODE	
D2002	MA2C165001VT	DIODE	
D2501	----------	WIRE CABLE	
D2503	MAZ4160NMF	DIODE	
D6302	B0JACE000001	DIODE	
D6303	MAZ4130NLF	DIODE	
D6305	MAZ4062NLF	DIODE	
D6306	MAZ4056NHF	DIODE	
D6307	MAZ4056NHF	DIODE	
D7501	MAZ4220N0F	DIODE	
D7602	MAZ4300NMF	DIODE	
D7751	B0JACE000001	DIODE	
D7752	MA2C700A0F	DIODE	
D7753	MA2C165001VT	DIODE	
D7754	B0JACE000001	DIODE	
DP7501	A2BA00000211	DISPLAY TUBE	

Ref. No.	Part No.	Part Name & Description	Remarks
F1101	K5D162BK0005	FUSE	⚠
IC1200	C0DAEJC00003	IC	
IC1511	B3NAA0000049	IC	
IC1512	B3NAA0000049	IC	
IC2501	C1AB00001767	IC	
IC2502	C0DBZJG00005	IC	
IC3001	C1AB00001739	IC	
IC6001	C2CBHF000251	IC	*1,*3
IC6001	C2CBHF000252	IC	*2,*4
IC6001	C2CBHF000253	IC	*5
IC6201	C0EBH0000172	IC	
IC6301	C0DBCHD00002	IC	
IC7501	C0HBB0000023	IC	
IR7501	PNA4618M09VT	IR RECEIVER	
J1	VEE0X50	EARTH WIRE	
JK3201	K2HA408B0053	JACK	
K3001	ERJ3GEY0R00V	M.RESISTOR CHIP	
K3010	ERJ3GEY0R00V	M.RESISTOR CHIP	
K4501	ERJ3GEY0R00V	M.RESISTOR CHIP	
K5001	ERJ3GEY0R00V	M.RESISTOR CHIP	
K5002	ERJ3GEY0R00V	M.RESISTOR CHIP	
K6006	F1H1H103A730	C.CAPACITOR	
K6012	ERJ3GEY0R00V	M.RESISTOR CHIP	*5
K7502	ERJ3GEY0R00V	M.RESISTOR CHIP	
K7503	ERJ3GEY0R00V	M.RESISTOR CHIP	
K7616	ERJ3GEYJ221V	M.RESISTOR CHIP	
L1120	ELF15N005A	LINE FILTER	⚠ *1,*3,*4,*5
L1120	ELF15N003A	LINE FILTER	⚠ *2
L1121	ELF15N005A	LINE FILTER	⚠ *1,*3,*4,*5
L1250	G0A220G00018	COIL	
L1260	G0A220G00018	COIL	
L2501	----------	WIRE CABLE	
L3001	G0C271JA0019	INDUCTOR	
L3004	G1C120J00001	INDUCTOR	
L3301	G0C150JA0019	INDUCTOR	
L3302	G0C680JA0019	INDUCTOR	
L3303	G0C330JA0019	INDUCTOR	
L3304	G0C680JA0019	INDUCTOR	
L4081	G0C471KA0004	INDUCTOR	
L5001	G0C560JA0019	INDUCTOR	
L6001	G0C5R6JA0019	INDUCTOR	
L6002	----------	WIRE CABLE	
L6004	----------	WIRE CABLE	
L7601	G0C100JA0030	INDUCTOR	
L7603	----------	WIRE CABLE	
L7605	G0C100JA0030	INDUCTOR	
L7608	G0C270JA0030	INDUCTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
L7610	G0C100JA0030	INDUCTOR	
L7702	G0C100JA0019	INDUCTOR	*1,*2,*3,*4
LB1120	J0JKB0000028	FILTER	
LB1121	----------	WIRE CABLE	
LB1210	----------	WIRE CABLE	
LB4073	J0JBC0000041	FILTER	*1,*3
LB4073	D0GDR00JA017	M.RESISTOR	*2,*4,*5
LB4077	J0JBC0000070	FILTER	*1,*3
LB4077	ERJ3GEY0R00V	M.RESISTOR CHIP	*2,*4,*5
LB4078	J0JBC0000070	FILTER	*1,*3
LB4078	ERJ3GEY0R00V	M.RESISTOR CHIP	*2,*4,*5
LB4079	J0JBC0000041	FILTER	*1,*3
LB4079	D0GDR00JA017	M.RESISTOR	*2,*4,*5
LB7601	J0JBC0000015	INDUCTOR	
LR1150	J1ZZA0000001	FILTER	
P1101	K2AA2H000007	AC INLET	⚠
P1531	K1KA02A00375	CONNECTOR	
P2501	VJS3538A007W	CONNECTOR	
P2571	K1KA08A00290	CONNECTOR	
P4001	K1MZ02A00003	CONNECTOR	
P4002	VJS3538A006W	CONNECTOR	
P5001	K1MN05A00020	CONNECTOR	
Q1150	B1DEDR000003	TRANSISTOR	
Q1151	2SC3311ASA	TRANSISTOR	
Q1152	2SC3311ASA	TRANSISTOR	
Q1153	B1DEEQ000001	TRANSISTOR	
Q1200	B3PBA0000078	PHOTO COUPLER	⚠
Q1341	B1AAGD000006	TRANSISTOR	
Q1342	2SD0601A0L	TRANSISTOR	
Q1351	B1AAGD000006	TRANSISTOR	
Q1354	B1AAGD000006	TRANSISTOR	
Q1501	PNA2604M01VT	PHOTO TRANSISTOR	
Q1502	PNA2604M01VT	PHOTO TRANSISTOR	
Q3001	2SD0601A0L	TRANSISTOR	
Q3003	2SB0709A0L	TRANSISTOR	
Q3202	2SB0709A0L	TRANSISTOR	
Q4081	2SD0602ARL	TRANSISTOR	
Q4082	2SD114900L	TRANSISTOR	
Q4083	2SD0601A0L	TRANSISTOR	
Q4084	2SB0710A0L	TRANSISTOR	
Q6305	2SD0601A0L	TRANSISTOR	
Q6306	2SD0601A0L	TRANSISTOR	
Q6307	B1AAGD000006	TRANSISTOR	
Q7701	2SB0709A0L	TRANSISTOR	*1,*2,*3,*4
QR1342	UNR211200L	TRANSISTOR RESISTOR	
QR3001	UNR221300L	TRANSISTOR RESISTOR	
QR3004	UNR221300L	TRANSISTOR RESISTOR	
QR3008	UNR221300L	TRANSISTOR RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
QR4061	UNR221100L	TRANSISTOR RESISTOR	
QR4081	UNR211100L	TRANSISTOR RESISTOR	
QR4082	UNR221300L	TRANSISTOR RESISTOR	
QR4504	UNR211500L	TRANSISTOR RESISTOR	
QR4506	UNR221500L	TRANSISTOR RESISTOR	
R1150	ERDS2TJ105T	C.RESISTOR	
R1153	ERG2SJ331E	M.RESISTOR	
R1154	ERDS2TJ105T	C.RESISTOR	
R1155	ERDS2TJ104T	C.RESISTOR	
R1156	ERDS2TJ330T	C.RESISTOR	
R1157	ERDS2TJ162T	C.RESISTOR	
R1158	ERDS2TJ331T	C.RESISTOR	
R1159	ERDS2TJ3R3T	C.RESISTOR	
R1160	ERX1SJR47E	M.RESISTOR	
R1161	ERDS2TJ101T	C.RESISTOR	
R1162	ERDS2TJ102T	C.RESISTOR	
R1163	ERDS2TJ101T	C.RESISTOR	
R1200	ERJ6GEYG103V	M.RESISTOR CHIP	
R1202	ERJ6GEYG222V	M.RESISTOR CHIP	
R1203	ERJ6GEYG243V	M.RESISTOR CHIP	
R1204	ERJ6GEYJ123V	M.RESISTOR CHIP	
R1205	ERJ6GEYJ222V	M.RESISTOR CHIP	
R1206	ERJ6GEYJ271V	M.RESISTOR CHIP	
R1342	ERJ3GEYJ104V	M.RESISTOR CHIP	
R1351	ERDS2TJ471T	C.RESISTOR	
R1501	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1502	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1503	ERDS2TJ151T	C.RESISTOR	
R1511	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1512	ERJ3GEYJ273V	M.RESISTOR CHIP	
R1513	ERJ6GEYJ121V	M.RESISTOR CHIP	
R2001	ERJ3GEYJ392V	M.RESISTOR CHIP	
R2002	ERJ3GEYJ105V	M.RESISTOR CHIP	
R2099	ERJ3GEYJ682V	M.RESISTOR CHIP	
R2501	ERJ6GEYJ1R2V	M.RESISTOR CHIP	
R2503	ERJ6GEYJ1R5V	M.RESISTOR CHIP	
R2514	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2515	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2516	ERJ3GEYJ221V	M.RESISTOR CHIP	
R2519	ERJ6GEYJ822V	M.RESISTOR CHIP	
R2520	ERJ3GEYJ183V	M.RESISTOR CHIP	
R2521	ERJ3GEYJ102V	M.RESISTOR CHIP	
R2522	ERJ3GEYJ101V	M.RESISTOR CHIP	
R2523	ERJ3GEYJ101V	M.RESISTOR CHIP	
R2551	ERJ3GEYJ103V	M.RESISTOR CHIP	
R2552	ERJ3GEYJ103V	M.RESISTOR CHIP	
R2561	ERJ3GEYJ102V	M.RESISTOR CHIP	
R2562	ERDS2TJ473T	C.RESISTOR	
R2563	ERJ3GEYJ102V	M.RESISTOR CHIP	
R3001	ERJ3GEYJ622V	M.RESISTOR CHIP	
R3002	ERJ3GEYJ822V	M.RESISTOR CHIP	
R3003	ERJ3GEYJ152V	M.RESISTOR CHIP	
R3004	ERJ3GEYJ682V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
R3005	ERJ3GEYJ472V	M.RESISTOR CHIP	
R3011	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3012	ERJ3GEYJ102V	M.RESISTOR CHIP	
R3013	ERJ3GEYJ273V	M.RESISTOR CHIP	
R3018	ERJ3GEYJ153V	M.RESISTOR CHIP	
R3020	ERJ3GEYJ152V	M.RESISTOR CHIP	
R3021	ERJ3GEYJ471V	M.RESISTOR CHIP	
R3022	ERDS2TJ681T	C.RESISTOR	
R3023	ERJ3GEYJ471V	M.RESISTOR CHIP	
R3024	ERJ3GEYJ102V	M.RESISTOR CHIP	
R3025	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3026	ERJ3GEYJ332V	M.RESISTOR CHIP	
R3029	ERJ3GEYJ822V	M.RESISTOR CHIP	
R3031	ERJ3GEY0R00V	M.RESISTOR CHIP	
R3032	ERJ3GEYJ685V	M.RESISTOR CHIP	
R3033	ERJ3GEYJ335V	M.RESISTOR CHIP	
R3038	ERJ3GEYJ222V	M.RESISTOR CHIP	*5
R3039	ERJ3GEYJ680V	M.RESISTOR CHIP	
R3040	ERJ3GEYJ392V	M.RESISTOR CHIP	
R3041	ERJ6GEYJ221V	M.RESISTOR CHIP	
R3042	ERJ3GEYJ473V	M.RESISTOR CHIP	
R3043	ERJ3GEY0R00V	M.RESISTOR CHIP	
R3212	ERJ3GEYJ750V	M.RESISTOR CHIP	
R4013	ERJ3GEYJ473V	M.RESISTOR CHIP	
R4014	ERJ3GEYJ472V	M.RESISTOR CHIP	
R4015	ERJ3GEYJ203V	M.RESISTOR CHIP	
R4016	ERJ3GEYJ153V	M.RESISTOR CHIP	
R4017	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4018	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4039	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4061	ERJ3GEYJ334V	M.RESISTOR CHIP	
R4062	ERJ3GEYJ103V	M.RESISTOR CHIP	
R4063	ERJ3GEYJ181V	M.RESISTOR CHIP	
R4071	ERJ3GEYJ153V	M.RESISTOR CHIP	
R4073	ERJ3GEYJ471V	M.RESISTOR CHIP	*1,*3
R4073	ERJ3GEY0R00V	M.RESISTOR CHIP	*2,*4,*5
R4075	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4081	ERJ3GEYJ123V	M.RESISTOR CHIP	
R4082	ERJ3GEYJ332V	M.RESISTOR CHIP	
R4084	ERJ3GEYJ102V	M.RESISTOR CHIP	
R4085	ERJ3GEYJ102V	M.RESISTOR CHIP	
R4086	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4087	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4088	ERJ3GEY0R00V	M.RESISTOR CHIP	
R4513	ERJ3GEYJ222V	M.RESISTOR CHIP	
R4601	ERJ3GEYJ471V	M.RESISTOR CHIP	
R4602	ERJ3GEYJ473V	M.RESISTOR CHIP	
R4651	ERJ3GEY0R00V	M.RESISTOR CHIP	
R6001	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6002	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6003	ERJ3GEYJ223V	M.RESISTOR CHIP	
R6006	ERJ3GEYJ183V	M.RESISTOR CHIP	
R6007	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6008	ERJ3GEY0R00V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
R6009	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6010	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6011	ERJ3GEYG223V	M.RESISTOR CHIP	
R6012	ERJ3GEYJ561V	M.RESISTOR CHIP	
R6013	ERJ3GEYJ105V	M.RESISTOR CHIP	
R6016	ERJ3GEYG103V	M.RESISTOR CHIP	
R6017	ERJ3GEYJ222V	M.RESISTOR CHIP	
R6019	ERJ3GEYJ103V	M.RESISTOR CHIP	
R6020	ERJ3GEYJ103V	M.RESISTOR CHIP	*3
R6020	ERJ3GEYJ183V	M.RESISTOR CHIP	*4
R6021	ERJ3GEYJ103V	M.RESISTOR CHIP	*1,*2,*4,*5
R6022	ERJ3GEYJ102V	M.RESISTOR CHIP	
R6023	ERJ3GEYJ332V	M.RESISTOR CHIP	
R6028	ERJ3GEYG103V	M.RESISTOR CHIP	
R6029	ERJ3GEYG103V	M.RESISTOR CHIP	
R6031	ERJ3GEYJ471V	M.RESISTOR CHIP	
R6032	ERJ3GEYJ471V	M.RESISTOR CHIP	
R6104	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6105	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6106	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6107	ERJ3GEYJ221V	M.RESISTOR CHIP	
R6201	ERJ3GEYJ332V	M.RESISTOR CHIP	
R6302	ERDS2TJ682T	C.RESISTOR	
R6307	ERJ6GEYJ222V	M.RESISTOR CHIP	
R6309	ERDS2TJ821T	C.RESISTOR	
R6310	ERJ6GEYJ182V	M.RESISTOR CHIP	
R6400	ERJ3GEYJ101V	M.RESISTOR CHIP	
R6401	ERJ3GEYJ101V	M.RESISTOR CHIP	
R7502	ERJ3GEYJ912V	M.RESISTOR CHIP	
R7503	ERJ3GEYJ362V	M.RESISTOR CHIP	
R7505	ERJ3GEYJ123V	M.RESISTOR CHIP	
R7506	ERJ3GEYJ123V	M.RESISTOR CHIP	
R7509	ERJ3GEYJ392V	M.RESISTOR CHIP	
R7513	ERJ3GEYJ182V	M.RESISTOR CHIP	
R7514	ERJ3GEYJ182V	M.RESISTOR CHIP	
R7516	ERJ3GEYJ154V	M.RESISTOR CHIP	
R7517	ERJ3GEYJ392V	M.RESISTOR CHIP	
R7518	ERJ3GEYJ512V	M.RESISTOR CHIP	
R7519	ERJ3GEYJ362V	M.RESISTOR CHIP	
R7520	ERJ3GEYJ912V	M.RESISTOR CHIP	
R7521	ERJ3GEYJ154V	M.RESISTOR CHIP	
R7522	ERJ3GEYJ203V	M.RESISTOR CHIP	
R7523	ERJ3GEYJ512V	M.RESISTOR CHIP	
R7525	ERDS2TJ821T	C.RESISTOR	
R7526	ERDS2TJ220T	C.RESISTOR	
R7527	ERJ3GEYJ203V	M.RESISTOR CHIP	
R7530	ERJ3GEYJ103V	M.RESISTOR CHIP	
R7601	ERDS2TJ331T	C.RESISTOR	
R7606	J0JCC0000124	EMI/EMC FILTER	
R7607	J0JCC0000124	EMI/EMC FILTER	
R7611	ERDS2TJ331T	C.RESISTOR	
R7706	ERJ3GEYJ101V	M.RESISTOR CHIP	*1,*2,*3,*4
R7707	ERJ3GEYJ102V	M.RESISTOR CHIP	*1,*2,*3,*4
R7751	ERJ3GEYJ102V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
S1531	K0C111A00006	SWITCH	
S1532	K0ZZ00000598	SWITCH	
S7501	EVQ21409K	LIGHT TOUCH SWITCH	
S7502	EVQ21409K	LIGHT TOUCH SWITCH	
S7503	EVQ11L09B	LIGHT TOUCH SWITCH	
S7505	EVQ11L09B	LIGHT TOUCH SWITCH	
S7506	EVQ11L09B	LIGHT TOUCH SWITCH	
S7507	EVQ11L09B	LIGHT TOUCH SWITCH	
S7509	EVQ21409K	LIGHT TOUCH SWITCH	
S7510	EVQ21409K	LIGHT TOUCH SWITCH	
S7511	EVQ11L09B	LIGHT TOUCH SWITCH	
S7512	EVQ21409K	LIGHT TOUCH SWITCH	
S7513	EVQ21409K	LIGHT TOUCH SWITCH	
S7515	EVQ21409K	LIGHT TOUCH SWITCH	
S7516	EVQ21409K	LIGHT TOUCH SWITCH	
S7518	EVQ21409K	LIGHT TOUCH SWITCH	
S7519	EVQ21409K	LIGHT TOUCH SWITCH	
S7520	EVQ21409K	LIGHT TOUCH SWITCH	
T1150	G4D2A0000113	SWITCHING TRANSFORMER	
T4081	EQQ7QF024Q	TRANSFORMER	
TU7601	ENG57818G1	UV TUNER	*1,*2,*3,*4
TU7601	ENG57820G1	UV TUNER	*5
W501	ERJ3GEY0R00V	M.RESISTOR CHIP	
W502	D0GDR00JA017	M.RESISTOR	
W503	ERJ3GEY0R00V	M.RESISTOR CHIP	
W504	D0GDR00JA017	M.RESISTOR	
W505	D0GDR00JA017	M.RESISTOR	
W506	D0GDR00JA017	M.RESISTOR	
W507	ERJ3GEY0R00V	M.RESISTOR CHIP	
W508	ERJ3GEY0R00V	M.RESISTOR CHIP	
W510	ERJ3GEY0R00V	M.RESISTOR CHIP	
W512	D0GDR00JA017	M.RESISTOR	
W514	ERJ3GEY0R00V	M.RESISTOR CHIP	
W515	ERJ3GEY0R00V	M.RESISTOR CHIP	
W516	ERJ3GEY0R00V	M.RESISTOR CHIP	
W517	D0GDR00JA017	M.RESISTOR	
W518	D0GDR00JA017	M.RESISTOR	
W519	D0GDR00JA017	M.RESISTOR	
W520	ERJ3GEY0R00V	M.RESISTOR CHIP	
W522	D0GDR00JA017	M.RESISTOR	
W523	D0GDR00JA017	M.RESISTOR	
W525	D0GDR00JA017	M.RESISTOR	
W526	ERJ3GEY0R00V	M.RESISTOR CHIP	
W527	ERJ3GEY0R00V	M.RESISTOR CHIP	
W528	ERJ3GEY0R00V	M.RESISTOR CHIP	
W529	ERJ3GEY0R00V	M.RESISTOR CHIP	
W530	ERJ3GEY0R00V	M.RESISTOR CHIP	
W531	ERJ3GEY0R00V	M.RESISTOR CHIP	
W532	ERJ3GEY0R00V	M.RESISTOR CHIP	
W534	ERJ3GEY0R00V	M.RESISTOR CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
W535	ERJ3GEY0R00V	M.RESISTOR CHIP	
W536	ERJ3GEY0R00V	M.RESISTOR CHIP	
W537	ERJ3GEY0R00V	M.RESISTOR CHIP	
W538	ERJ3GEY0R00V	M.RESISTOR CHIP	
W539	ERJ3GEY0R00V	M.RESISTOR CHIP	
W540	D0GDR00JA017	M.RESISTOR	
W541	ERJ3GEY0R00V	M.RESISTOR CHIP	
W542	ERJ3GEY0R00V	M.RESISTOR CHIP	
W543	ERJ3GEY0R00V	M.RESISTOR CHIP	
W544	D0GDR00JA017	M.RESISTOR	
X3001	H0D357400067	CRYSTAL OSCILLATOR	
X3002	H0D443400039	CRYSTAL OSCILLATOR	
X6001	H0D120500009	CRYSTAL OSCILLATOR	
X6002	H0A327200064	CRYSTAL OSCILLATOR	
		MISCELLANEOUS	
	EYF52BC	FUSE HOLDER	
	EYF52BC	FUSE HOLDER	
	VMD4258	PHOTO TRANSISTOR HOLDER	
	VMD4258	PHOTO TRANSISTOR HOLDER	

12. Schematic Diagram for printing with A4 size

For your safety please read the following text carefully

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS 1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstance should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

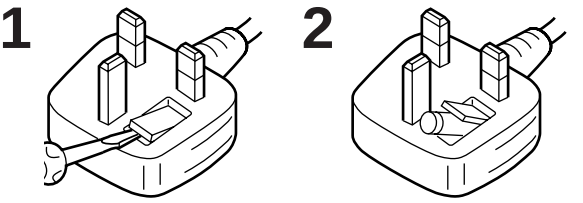
How to replace the Fuse

- There are two types of the AC Mains Lead assembly: **A** and **B** as shown below.

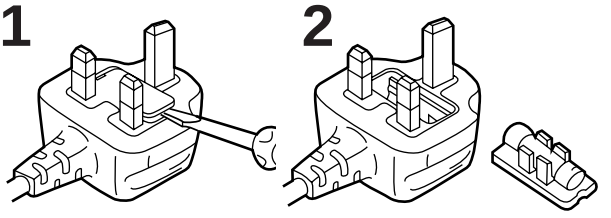
1 Open the fuse compartment with a screwdriver.

2 Replace the fuse and fuse cover.

TYPE A



TYPE B



443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (–)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (–)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [–]	CONTROL HEAD (–)
CTL [+]	CONTROL HEAD (+)
CTL [–]	CONTROL HEAD (–)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ

FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)
LINE OUT [L]	LINE OUTPUT (L)
LINE OUT [R]	LINE OUTPUT (R)
LP [H]	LP Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING
M GND	MOTOR GND
M REG	MOTOR REGULATOR
MAIN OUT	MAIN OUTPUT
MAIN [L]	MAIN Ⓛ
MAIN/MONO	MAIN/MONAURAL
MAX IN	MAXIMAM INPUT
MES [H]	MESECAM Ⓗ
MESE [H]	MESECAM Ⓗ
MESE [L]	MESECAM Ⓛ
METER 5V	LEVEL METER 5V
METER [L]	LEVEL METER (L)
METER [R]	LEVEL METER (R)
METER. L/AVS	LEVEL METER (L)
METER. R/AVC	LEVEL METER (R)
MI/BI [L]	MIX Ⓗ/BILIGUAL
MIC GND	MIC GND
MIC IN	MIC INPUT
MIC IN [L]	MIC INPUT (L)
MIC IN [R]	MIC INPUT (R)
MIC [H]	MIC Ⓗ
MIX [H]	MIX Ⓗ
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ
MODE SEL	AUDIO MODE SELECT
MODE SW	AUDIO MODE SW
MODE. S. IN	AUDIO MODE SELECT INPUT
MODE. S. OUT	AUDIO MODE SELECT OUTPUT
MONO [H]	MONAURAL Ⓗ
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ
MONO2 [L]	MONAURAL 2
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)
MOTOR GND	MOTOR GND
MUTE	MUTE
N. A. REC [L]	NORMAL AUDIO RECORDING
N. SW 12V	NON SW 12V
N. SW. 5. DET	NON SW 5V DETECT
NICAM	NICAM
NICAM [L]	NICAM Ⓛ
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ
NORMAL [H]	NORMAL Ⓗ
NR BIAS	NR BIAS
NTSC [L]	NTSC Ⓛ
OCH	CONTROL AGC CIRCUIT
OUT	OUTPUT

P-OFF [H]	POWER OFF Ⓗ
P-OFF [L]	POWER OFF Ⓛ
P. FAIL	POWER FAILURE DETECT
P. OFF [H]	POWER OFF Ⓗ
P. OFF [L]	POWER OFF Ⓛ
PAL [H]	PAL Ⓗ
PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
PB ADJ OUT	PLAYBACK ADJUST OUTPUT
PB OUT	PLAYBACK OUTPUT
PB. H	PLAYBACK Ⓗ
PFG	PG/FG
PHOTSN +B	PHOTO SENSOR +B
PICT. CNT	PICTURE CONTROL
PLAY LED/RVS LED	PLAY LED/REVERSE LED
PLAY. PO	PLAY POSITION
PLAY/R. LED	PLAY LED/REVERSE LED
PLY/DEW	PLAY/DEW Ⓗ
POWER OFF [L]	POWER OFF Ⓛ
PREROLL [H]	PREROLL Ⓗ
PWRFAIL	POWER FAILURE DETECT
R. CH [H]	Rch Ⓗ
R. CH [L]	Rch Ⓛ
R. ST	RESET
R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
RCH [H]	Rch Ⓗ
REC 12V	RECORDING 12V
REC CHROMA	RECORDING CHROMINANCE SIGNAL
REC H	RECORDING Ⓗ
REC IN	RECORDING INPUT
REC OUT [L]	RECORDING OUTPUT Ⓛ
REC START	RECORDING START
REC VR [C]	RECORDING VOLUME (COMMON)
REC VR [L]	RECORDING VOLUME (L)
REC VR [R]	RECORDING VOLUME (R)
REC Y	RECORDING LUMINANCE SIGNAL
REC [H]	RECORDING Ⓗ
REC. C	RECORDING CHROMINANCE SIGNAL
REC. Y	RECORDING LUMINANCE SIGNAL
REC/EE CTL	RECORDING/EE CONTROL
REEL-T	REEL PULSE (TAKE-UP)
REEL-S	REEL PULSE (SUPPLY)
REGULATOR FILTER	REGULATOR FILTER
RESET	RESET
REV M F/R	REVIEW MOTOR FORWARD/REVERSE
REV M V1	REVIEW MOTOR V1
REV M V2	REVIEW MOTOR V2
REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
REV MOTOR V1	REVIEW MOTOR V1
REV MOTOR V2	REVIEW MOTOR V2
REV MOTOR [+]	REVIEW MOTOR (+)
REV MOTOR [–]	REVIEW MOTOR (+)
REV. M. GND	REVIEW MOTOR GND
RF. CHROMA	RF CHROMINANCE SIGNAL

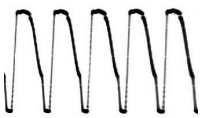
RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [–]	SOLENOID (–)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ
SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

T1150-2 STOP
3.8Vp-p (2msec.div.)

T1150-4 STOP
560Vp-p (5usec.div.)

T1150-6 STOP
33Vp-p (5usec.div.)

T1150-11 STOP
100Vp-p (5usec.div.)

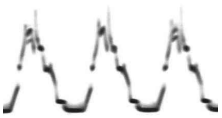


T1150-12 STOP
18Vp-p (5usec.div.)

T1150-13 STOP
40Vp-p (5usec.div.)

T1150-16 STOP
76Vp-p (5usec.div.)

Q1200-1 STOP
0.4Vp-p (5usec.div.)



IC2501-22,23,25 PLAY
7.0Vp-p (2msec.div.)

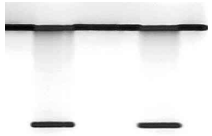
IC6001-13 STILL
5.0Vp-p (5msec.div.)

IC6001-18 REC
5.0Vp-p (10msec.div.)

IC6001-50 REC/PLAY
2.0Vp-p (20usec.div.)

IC6001-52 REC/PLAY
2.0Vp-p (20usec.div.)

IC6001-68,69 REC
5.0Vp-p (5msec.div.)

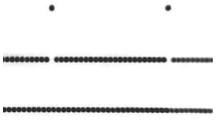


IC6001-70 REC
5.0Vp-p (5msec.div.)

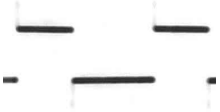
IC6001-71 REC
5.0Vp-p (5usec.div.)

IC6001-72 REC
5.0Vp-p (5msec.div.)

IC6001-79,80 FF/REW
5.0Vp-p (1msec.div.)



IC6001-90 REC
5.0Vp-p (10msec.div.)



IC6001-94,95 REC
6.8Vp-p (10msec.div.)

IC6001-97 PLAY
0.8Vp-p (10msec.div.)

IC3001-6 REC/PLAY
1.2Vp-p (0.5msec.div.)

IC3001-17 REC
1.2Vp-p (20µsec.div.)

IC3001-26 REC
0.5Vp-p (20µsec.div.)

IC3001-29 REC/PLAY
2.2Vp-p (20µsec.div.)

IC3001-45,46 PLAY
0.5Vp-p (20µsec.div.)

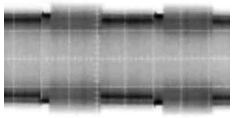
IC3001-49 PLAY
0.5Vp-p (20µsec.div.)

IC3001-73 REC/PLAY
5.0Vp-p (5msec.div.)

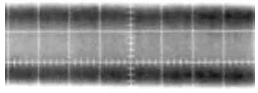
IC3001-74 REC/PLAY
5.0Vp-p (5msec.div.)

IC3001-80 REC/PLAY
0.5Vp-p (10msec.div.)

IC3001-89 PLAY
1.5Vp-p (20µsec.div.)

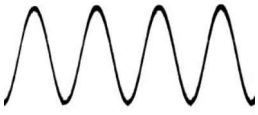


IC3001-90 REC
1.8Vp-p (5msec.div.)



IC3001-91 PLAY
1.5Vp-p (20µsec.div.)

IC3001-96 PLAY
5.0Vp-p (5msec.div.)



IC3001-98 REC
1.6Vp-p (0.5msec.div.)

IC0201 (CAPSTAN MOTOR DRIVE)
CAPSTAN MOTOR COILS
A1
A2
A3
MOTOR DRIVE
DIFFERENTIAL AMPLIFIRE
TORQUE CONTROL
TL AMP
EC AMP
HALL
HALL
HALL
H3-
H3+
H1-
H1+
H2-
H2+
VH+
DEF AMP
POSITION SIGNAL PROCESS
TORQUE DIRECTION SELECT
HALL POWER
VM
TL
EC
ED/S
UNREG 15V
TL2502
P0201 P2571 2
P0201 P2571 5
P0201 P2571 6
P0201 P2571 7
CAPSTAN FG HEAD
P0201 P2571 3
TW2015
IC6001 (SYSTEM CONTROL & SERVO)
CURRENT LIMIT Ⓗ
CAP ET
CAP R/F
CAP FG OUT
CAP FG IN
IC2501 (LOADING MOTOR & CYLINDER MOTOR DRIVE)
LOADING MOTOR
P1531 1
P1531 2
OUT 1
OUT 2
AMP
AMP
PRE-DRIVE
CONTROL LOGIC
F IN
R IN
LOADING Ⓗ
UNLOADING Ⓗ
CYLINDER MOTOR COILS
M1
M2
M3
COM
MOTOR DRIVE
PRE-DRIVE
MOTOR DRIVE SIGNAL GENERATOR
SELECTOR
DIFFERENTIAL AMPLIFIRE
O REF
CTL AMP REF
PG COIL
DIFFERENTIAL AMPLIFIRE
FG/PG COMPOSER
DIFFERENTIAL AMPLIFIRE
CYL ET
CYL PFG
CONTROL HEAD
P4002 5
P4002 6
TL6001
125Hz
CTL HEAD(-)
CTL HEAD(+)
TW2002
EX.FF/REW Ⓛ
PB CTL OUT
MODE SW
S1532
POSITION SW1
POSITION SW2
POSITION SW3
POSITION SW4
T.PHOTO
S.PHOTO
SAFETY TAB Ⓛ
Q1501
TAKE-UP PHOTO SENSOR
D1501
SENSOR LED
Q1502
SUPPLY PHOTO SENSOR
S1531
SAFETY TAB SW
+5V
IC1512
(S-REEL SENSOR)
IC1511
(T-REEL SENSOR)
+5V
TL6012
TL6013
T-REEL
S-REEL
32KHz IN
32KHz OUT
12MHz IN
12MHz OUT
D VDD
RESET
X6002
X6001
TW1004
+B
BACK-UP BATTERY
B7751
TL7509
TL7510
IC6301
(SWITCHING REG.)
+5V
OUT
IN
SW
HEATER(-)
HEATER(+)
UNREG 6V
FROM POWER
POWER ON Ⓗ
IR7501
(IR RECEIVER)
IR
+5V
IC6201
(RESET)
OUT
+5V
P.FAIL Ⓛ
IC TALK
IC LSN
IC CLK
FL DRV CS
DP7501
(TIMER DISPLAY)
F+
F+
F-
F-
IC7501 (FIP DRIVE)
G1
G7
S18
S17
S9
S8
S1
S.DATA
S.CLOCK
CS
A3
A2
POWER S7515
PICTURE MODE S7520
PROG GUIDE S7516
PROG PLAY S7519
TIMER CHECK S7501
EJECT S7511
PLAY S7502
CH DOWN S7507
FF S7513
STOP S7512
REW S7510
JET REW S7509
REC S7518
TAPE REFRESH S7503
T.REC S7505
CH UP S7506

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO BLOCK DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE

JK3201 (REAR JACK)

VIDEO OUT

VIDEO IN

TW3002

Q3202

AMP

TL3003

TO/FROM TUNER

RFC VIDEO OUT

TUNER VIDEO

IC3001 (AUDIO/VIDEO SIGNAL PROCESSOR)

ATT -6dB

ATT -4dB

ATT -10dB

ATT -10dB

VIDEO AGC

SVHS

SVHS

ATP

HPF

2MHz LPF

ACC

FIXED TO INT IN THES MODELS BY PIN53

EXT

INT

CLEAR SYNC

FEED BACK CLAMP

VIDEO ALC

SQUELCH

NTSC/PAL CONVERTER

COLOUR KILLER

EXT

INT

6dB AMP

C-SQUELCH

V-AMP

IC6001

OSD SIGNAL PROCESS

Q3001

BUFFER

Q7701

BUFFER

L7702, C7714

BPF

(A/C/D/E)

MAIN CONV 2

C LPF2

VCA

C CCD

MAIN CONV 1

CCD LPF

4.43PAL⇔MPAL CONV DELAY

PILOT ADD

BPF

B.D

PILOT ERASE

C LPF1

GCL

Y-LPF

SECAM DELAY +SSEQ

SVHS+L SECAM

SVHS+L SECAM

NON-LINEAR DE-EMPHASIS

SQPB

SQPB

SQPB EQ

R(SVHS)

R(SVHS)

DO/REC

DO

GCL

GCL

LPF

Y-NOISE REDUCTION

HP-NC TRAP-NC

PHASE COMPARATOR

DEH

NON-LINEAR EMPHASIS

APC SW

PB APC

KILLER

REC APC

ACC SW

ACC DET

CHROMA ACC DET

ET LPF

REC FBC+ALC PB AGC+APL

L3001, C3007

PEAKING FILTER

MAIN DE-EMPHASIS

MAIN EMPHASIS CARRIER OFFSET W.C/D.C

fo/DEVIATION ADJUSTMENT

FM MODULATION

REC FILTER

B.E

MIX LEVEL ADJUST

L SECAM

L SECAM

CHROMA ACC

C-ACC:ON

THROUGH

COLOUR KILLER

fh HPF CTL TRAP

C-DELAY

REC TRAP/ Hi-Fi TRAP

NO FREC TRAP

FREC TRAP

L SECAM

L SECAM

LPF

REC MUTE

VCA

SUB LPF

DEMO

DLIM

G-EQ

X3001

X3002

X'TAL VCO OSCILLATOR

2FSC

C CLOCK DRIVER

TO C CCD

SQPB

SQPB

SQPB DL

P-EQ

FM AGC

629MHz TRAP

INT

EXT

EXTERNAL PB LUMINANCE SIGNAL INPUT LINE (NOT USED IN THESE MODELS)

SP2

SP2

CH2

CH1

SP1

SP1

SP L

SP COM

SP R

P5001 3

P5001 2

P5001 1

TO/FROM DD CYLINDER VIDEO HEAD

TO SYSTEM CONTROL

S-VHS PB Ⓗ

S-VHS DET

Y-CCD DELAY

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE BLOCK DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION

HOT

P1101 K2AA2H000007
AC INLET
F1101 VSF0243C16
D1110 ERZVA5Z471
(A)
LB1121 0
C1122 330P
(B/C/D/E)
L1121 ELF15N005A
C1121 0.033:A 0.068:B/C/D/E
L1120 ELF15N003A:A ELF15N005A:B/C/D/E
D1140 DF80S-6622
C1143 400V68

T1150 G4D2A0000113
P2
P1
B2
B1

TL1009
HEATER (-) T
C1280 10V100
TL1008
HEATER (+) T
D1280 11EQS04
TL1029
UNREG -29V T
D1270 MA185
C1270 50V56
D1250 ERA85-009V5
D1251 ERA85-009V5
L1250 22u
C1250 16V680
C1251 16V47
TL1015
UNREG 15V R S
R1200 10K
D1260 11EQS04
D1261 11EQS04
L1260 22u
C1260 10V1000
C1261 10V100
TL1006
UNREG 6V R S V
D1230 MA185
C1230 50V56
D1180 MA7510
TL1038
UNREG 38V R
GND R
TLGND1
TO BOTTOM PLATE

IC1200 uPC1093J
4.6
2.5

Q1153 2SK2876 (VOLTAGE CONTROL)
648
405
-152
R1162 1K
R1163 100
C1155 270P
C1210 3300P
LB1210 0
R1150 1M
R1154 1M
LR1150 VLP0392
LB1120 J0JKB0000028
C1123 F1BAF1020020

Q1150 2SK2645 (VOLTAGE CONTROL)
648
2.2
0
C1154 0.022
R1153 330(2W)
R1155 100K
D1151 AU012V2

Q1152 2SC3311A (VOLTAGE CONTROL)
R1161 100
0
2.2
R1160 0.47(1W)

Q1151 2SC3311A (VOLTAGE CONTROL)
2.2
0.3
R1157 1600
D1157 MA4027L
C1151 0.047
D1155 MA165
C1153 0.1
R1159 3.3
R1158 330
D1152 MA185
C1152 0.01

Q1200 PC123ZY2
16.3
6.0
0.9
4.9
R1156 33
R1206 270
R1205 2200
C1200 0.1
R1204 12K
R1203 24K
R1202 2200

NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
POWER TRANSFORMER SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

TU7601
ENG57818G1:A/C/D
ENG57820G1:B
ENG57912G1:E

Ⓟ UNREG 38V
Ⓢ POWER ON Ⓗ
Ⓟ UNREG 6V
Ⓢ CYLINDER VG
Ⓟ UNREG 15V
Ⓟ GND
Ⓥ AV 12V
Ⓢ GND
Ⓣ GND
Ⓥ GND
Ⓥ TUNER VIDEO
Ⓢ AFC S-CURVE
Ⓥ TUNER AUDIO
Ⓢ SW1
Ⓢ SW2
Ⓢ IIC DATA
Ⓢ IIC CLOCK
Ⓥ RFC VIDEO OUT
Ⓥ RFC AUDIO OUT
Ⓢ Ⓣ SYSTEM CTL 5V
Ⓢ BACK UP 5V
Ⓢ REG 5V
Ⓢ Ⓥ VIDEO 5V
Ⓥ TUNER 5V

QR1342 UN2112 (POWER ON:ON)
Q1342 2SD601A (POWER ON Ⓗ:ON)
Q1354 2SC1959Y (5V REG.)
Q1341 2SC1959Y (12V REG.)
Q1351 2SC1959Y (5V REG.)
Q6305 2SD601A (5V REG.)
Q6307 2SC1959Y (5V REG.)
Q6306 2SD601A (5V REG.)
TL1002
TW1004
D6303 MA4130NL
D1351 MA4056NH
D6306 MA4056NH
D6307 MA4056NH
D6305 MA4062NL
D6302 RB441P
D7751 RB441P
D7752 MA700A
D7753 1SS254
D7754 B0JACE000001
B7751 CR2354-1GUF

L7610 10u
L7605 10u
L7601 10u
L7603 0
LB7601 J0JBC0000015
L7608 27u:A/B/C/D 33u:E
R7606 J0JCC0000124
R7607 J0JCC0000124

1 N.SW 5V
2 AUDIO OUT
3 DATA
4 N.SW 5V
5 CLOCK
6 VIDEO OUT
7
8
9
10 GND
11 CLOCK
12 DATA
13
14 N.SW 5V
15
16 UNREG 30V
17 IF OUT
18 IF IN
19 SW1
20 SW2
21 A COMPO
22
23 AFC S-CURVE
24 TUNER VIDEO
25 TUNER 5V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
POWER SUPPLY/RF
SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP

IC1511
RPI303
(T-REEL SENSOR)

IC1512
RPI303
(S-REEL SENSOR)

IC6201
PST3142NR
(RESET)

IR7501
PNA4618M09V
(IR RECEIVER)

Q1501
PNA2604M01
(T-PHOTO)

Q1502
PNA2604M01
(S-PHOTO)

SENSOR
D1501
B3EA00000072

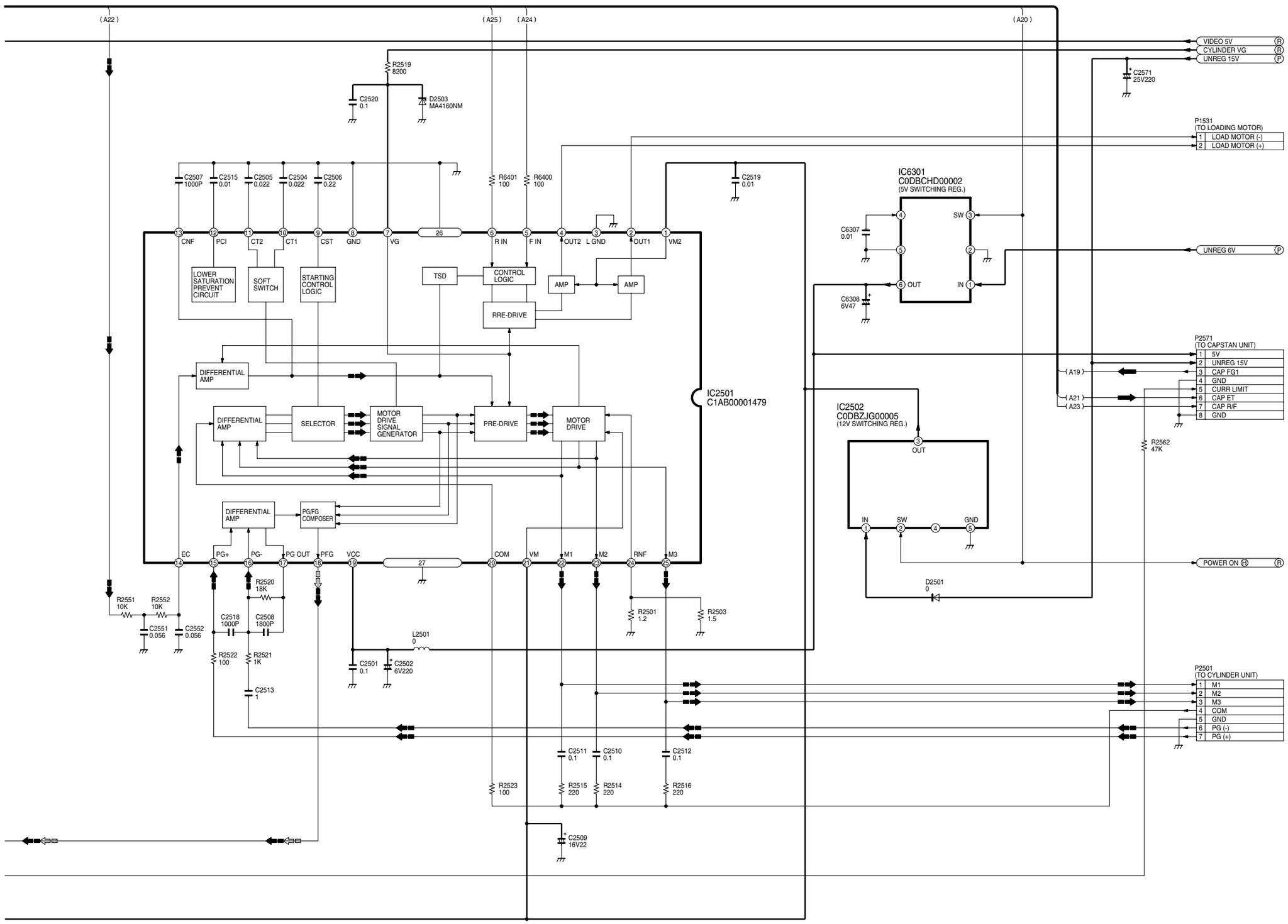
MODE SW
S1532
K0ZZ00000598

IC6001
C2CBHF000252:A/E
C2CBHF000253:B
C2CBHF000251:C/D

Q7701
2SB709A
(AMP)

SAFETY TAB
S1531
K0C111A00006

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM



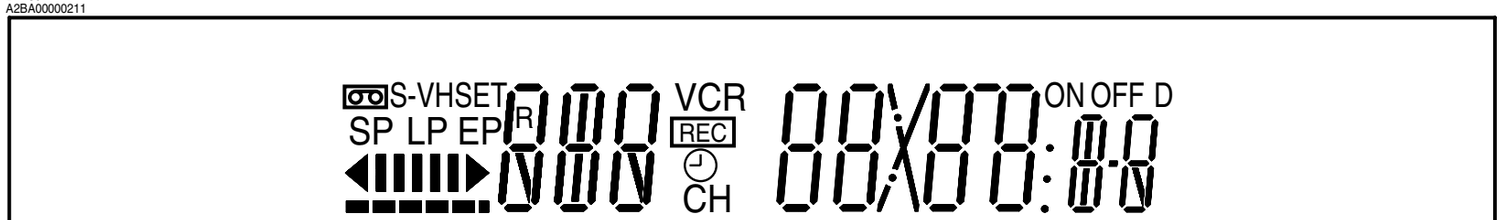
NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION

DP7501
A2BA00000211



F+ P1 P2 P3 P4 P5 P6 P7 P8 NC P9 P10 P11 P12 P13 P14 P15 P16 P17 P18 NC NC NC NC NC NC NC NC NC 7G 6G 5G 4G 3G 2G 1G NC NC F-
1 2 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 44 45

Ⓟ HEATER (+)
R7526 22
C7504 0.01

Ⓟ HEATER (-)
D7501 MA4220N
C7501 35V10
R7525 820

Ⓟ UNREG -29V
R7530 10K
C7506 0.1

-26.7 -22.2 -26.7 -26.7 -26.7 -26.7 -26.7 -22.2 -22.2 -22.2 -22.2 -22.6 -22.6 -22.6 -26.9 -17.6 -27.0 -27.2
36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 VEE

IC7501
M35502AFP

S DATA S CLOCK CS Ⓛ A3 A2 A5 A4 VSS OSC VCC G1 G2 G3 G4 G5 G6 G7 S18
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
4.0 4.3 3.0 5.1 5.1 2.3 5.1 -22.8 -22.8 -22.8 -22.8 -22.8 -22.8 -22.8

Ⓢ S.DATA
Ⓢ S.CLOCK
Ⓢ FIP CS
C7502 10P
Ⓡ SYSTEM CTL 5V
Ⓡ GND
R7506 12K
R7505 12K
C7505 6V100

PLAY S7502 EVQ11G09K R7521 150K
CH DOWN S7507 EVQ11G09K R7513 1800
EJECT S7511 EVQ11L09B R7509 3900
TIMER CHECK S7501 EVQ11G09K R7503 3600
PROG PLAY S7519 EVQ11G09K R7523 5100
PROG GUIDE S7516 EVQ11G09K R7520 9100
PICTURE MODE S7520 EVQ11G09K R7527 20K
POWER S7515 EVQ11G09K

T.REC S7505 EVQ11L09B R7516 150K
CH UP S7506 EVQ11L09B R7514 1800
TAPE REFRESH S7503 EVQ11L09B R7517 3900
REC S7518 EVQ11G09K R7519 3600
JET REW S7509 EVQ11G09K R7518 5100
REW S7510 EVQ11G09K R7502 9100
STOP S7512 EVQ11G09K R7522 20K
FF S7513 EVQ11G09K

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
TIMER SECTION SCHEMATIC DIAGRAM

F E D C B A
1 2 3 4 5 6 7 8

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

JK3201
K2HA408B0053
(REAR JACK)
AUDIO IN / VIDEO IN / AUDIO OUT / VIDEO OUT

R AV 12V
S VIDEO OUT
R RFC VIDEO OUT
S IIC CLOCK
S IIC DATA
S HEAD SW
S MESECAM Ⓗ
S TRACKING ENV.
S FM MUTE Ⓗ
R RFC AUDIO OUT

L3304 68u
C3048 0.1
C3049 0.1
C3050 16V47
R3022 680
R3023 470
Q3202 2SB709A (AMP)
C3051 6V470
R3039 68
TL4505 TL3003 TL4503 TL3002
LB4079 0:A/B/E VLP0147: C/D
C4079 470P (C/D)
LB4073 0:A/B/E VLP0147: C/D
R4073 0:A/B/E 470:C/D
C4075 470P
R3212 75
R4075 470
C4603 6800P
R4602 47K

QR4506 UN2215 (MUTE)
QR4504 UN2115 (BUFFER)
(A/C/D/E)
(B)
R3038 2200
C3046 50V1
R3018 15K
R4018 10K
TW3001
C3042 25V4.7
B-Y INVERT
COME
TANK
CR DET
MESECAM DET
C3047 0.1
COLOR LEVEL DETECTOR
DET DET
ENVDET
HPF

L5001 56u
C5006 0.1
C5005 6V100

P4002
(TO A/C HEAD)
AUDIO ERASE IN 1
GND 2
AUDIO HEAD (R) 3
AUDIO HEAD (W) 4
CTL HEAD (-) 5
CTL HEAD (+) 6
S CTL HEAD (+)
S CTL HEAD (-)

R4081 12K
C4082 470P
T4081 EQQ7QF024Q
C4081 0.022
R4082 3300
Q4081 2SD602A (OSC)
R4088 0
C4084 1800P
C4085 0.022

P4001
(TO FULL ERASE HEAD)
FULL ERASE IN 1
FULL ERASE OUT 2
P UNREG 6V
R GND

C4086 6V47
R4086 2200
Q4084 2SB710A (ERASE HEAD DRIVE)
R4087 2200
QR4082 UN2213 (BIAS Ⓗ :ON)
L4081 470u
C4083 6V220

P5001
(TO CYLINDER UNIT)
SP R 1
SP COM 2
SP L 3
GND 4
5
B1 B2 B3 B5

C4066 2200P
QR4061 UN2211 (PAL 9H Ⓗ :ON)
QR3004 UN2213 (LP/EP:ON)

S SP Ⓛ
S BIAS Ⓗ
S PAL 9H Ⓗ
S D.A.REC Ⓗ
R TUNER AUDIO
B7
R4039 10K
QR4081 UN2111 (D.A.REC Ⓗ :OFF)
R4084 1K
Q4082 2SD1149 (PB:ON)
R4085 1K
Q4083 2SD601A (PB:ON)

R TUNER 5V
R VIDEO 5V

C4052 0.1
C4051 6V220 (C/D)
R4061 330K
C4061 0.01
R4062 10K
R4063 180
C4062 6V33
C4016 15P (C/D)
C4063 50V3.3
C4064 1800P
R4071 15K
C4065 1800P
R4015 20K
C4042 25V4.7

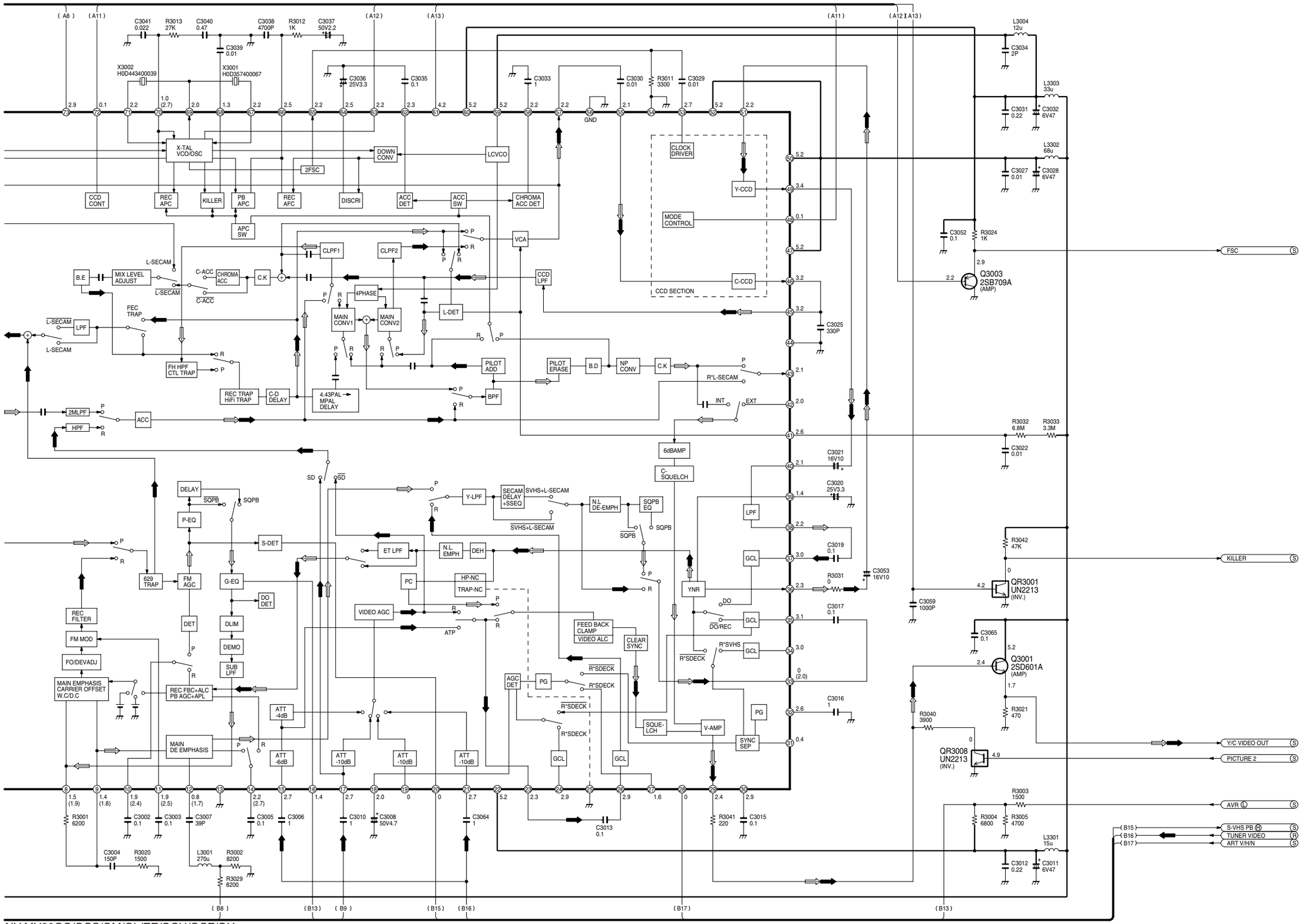
C5003 0.01
C5004 0.01
B3 B2 B1
SP2 SP2 SP1 SP1
CH2 CH1 CH2 CH1
REC MUTE
VCA
EXT INT
C4041 25V4.7
C4053 1000P (C/D)
SP ON
FH TRAP
PREAMP
REC ON
EP ON
LB4077 0:A/B/E J0JBC0000070:C/D
LB4078 0:A/B/E J0JBC0000070:C/D
VCA DET
REC EQ
BAND GAP
C4018 6V22

IC3001
HA118425F

C4011 0
R4016 15K
R4017 10K
R4013 47K
R4014 4700
C4010 16V10
C3062 16V10
C4601 16V10
R4601 470
C3066 0.1

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

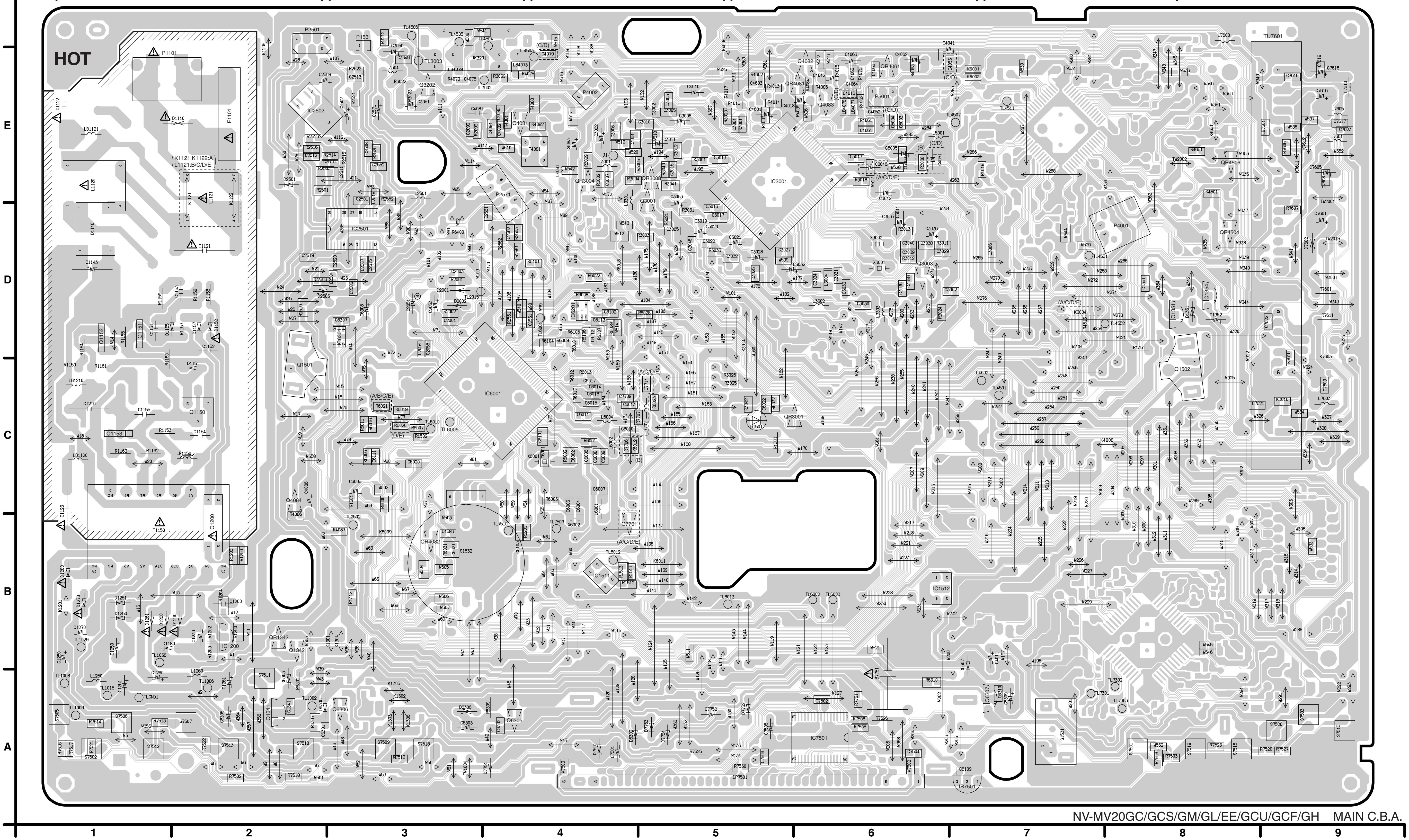


NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE
/AUDIO SECTION
SCHEMATIC DIAGRAM

(VEP06F33P:NV-MV20GC/GCS/GM)(VEP06F33Q:NV-MV20GL)(VEP06F33R:NV-MV20EE)(VEP06F33S:NV-MV20GCU/GCF)(VEP06F33T:NV-MV20GH)



NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH MAIN C.B.A.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

MAIN C.B.A.

Transistor		**Test Point**	
Q1150	C-2	TL1002	A-2
Q1151	D-1	TL1006	A-2
Q1152	D-1	TL1008	A-1
Q1153	C-1	TL1009	A-1
Q1200	B-2	TL1015	A-1
Q1341	A-2	TL1029	B-1
Q1342	B-2	TL1038	B-1
Q1351	D-8	TL2015	D-3
Q1354	D-8	TL2502	B-3
Q1501	C-2	TL3002	E-4
Q1502	C-8	TL3003	E-3
Q3001	D-5	TL4501	C-7
Q3003	D-6	TL4502	C-7
Q3202	E-3	TL4503	E-4
Q4081	E-4	TL4504	F-4
Q4082	E-6	TL4505	F-3
Q4083	E-6	TL4506	F-3
Q4084	C-2	TL4507	E-7
Q6305	A-4	TL4511	E-7
Q6306	A-3	TL4551	D-7
Q6307	A-7	TL4552	D-8
Q7701	B-4	TL6001	D-4
Transistor & Resistor		TL6002	B-6
QR1342	B-2	TL6003	B-6
QR3001	C-6	TL6005	C-3
QR3004	E-4	TL6010	C-3
QR3008	E-5	TL6012	B-4
QR4061	E-6	TL6013	B-5
QR4081	E-6	TL7301	A-7
QR4082	B-3	TL7302	A-8
QR4504	D-8	TL7303	A-8
QR4506	E-8	TL7509	B-4
Integrated Circuit		TL7510	B-4
IC1200	B-2	TLGND1	A-1
IC1511	B-4	TW1004	A-3
IC1512	B-6	TW2001	D-9
IC2501	D-3	TW2015	D-9
IC2502	E-2	TW3001	D-9
IC3001	E-5	**Connector**	
IC6001	C-4	P1101	E-1
IC6201	D-4	P1531	F-3
IC6301	D-3	P2501	F-2
IC7501	A-6	P2571	E-4
		P4001	D-8
		P4002	E-4
		P5001	E-6
		TU7601	E-9

ADDRESS INFORMATION

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
1	NC	I	Hi-Z fix.	In	In	In
2	CODE1	I	AD input terminal for model setting.	In	In	In
3	CODE2	I	AD input terminal for model setting.	In	In	In
4	T.S.CUREVE	I	Input terminal for "S-Curve" of Tuner AFC at channel selecting.	In	In	In
5	CYLREG_SHORT	I	REG 12V short detection signal. It is a measure for cylinder driver over heat by short. Perform detection process at 3 seconds after that the P.ON (H) signal at Pin 83 of IC6001 has been shifted from Low to High. [Detection method] When the terminal voltage is less than 3.0V during 3 seconds continuously, the power is turned off compulsorily. * When a cassette is in, the power is turned off after a few second delay for the mechanism initial function. * Key/Remote controller input is inhibited while the compulsory power off process.	In	In	In
6	NORM/SERV/T2/TES	I	Factory mode/ Service mode setting terminal. Input Voltage / Mode Over 4.0V / Normal Over 2.0V and less than 4.0V / Service Over 1.0V and less than 2.5V / Test 2 Less than 1.0V / Test 1	In	In	In
7	S-PHOT	I	Input terminal of the Tape End sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In
8	T-PHOT	I	Input terminal of the Tape Beginning sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In
9	TRACKING_ENVE	I	Input terminal of the Video envelope signal.	In	In	In
10	NC	O	Low fix.	Low	Low	Low
11	CURRENT.LIMIT	O	Control terminal for the Capstan current limit. (Output impedance: MIN:1K, TYP:2.5K, MAX:4.0K)	In DA=0V	Low	In DA=0V
12	EEPROM_CS	O	Chip Select terminal for NAVI Data backup EEPROM. *Active Low output.	High	Low	Low
13	ART.V/H/N	O	Output terminal for the Artificial V-sync. 1. In trick playback. Artificial V sync inserting timing : High Artificial H sync inserting timing : Hi-Z (M output) Except above conditions : Low 2. NAVI REC : Hi-Z 3. OSD REC : Hi-Z 4. Other than above conditions : Low	Low	Low	Low
14	REMOCON	I	Input terminal for the Remote Controller.	In	In	In
15	PICT1	O	Control terminal for the Picture mode.	Low	Low	Low
16	NC	O	Low fix.	Low	Low	Low
17	PICT2	O	Control terminal for the Picture mode.	Low	Low	Low
18	VIDEO.H.SW	O	Video head switching signal *L'/R="High" *R'/L="Low"	Low	Low	Low
19	AUDIO.H.SW	O	Head switching signal for Audio circuit.	Low	Low	Low
20	D.FM.REC	O	Recording control signal for Hi-Fi Audio signal. *REC, INSERT, AV INSERT:"High" is output. (Rec on) *Other than above condition: "Low" is output. (Rec off) *From L to H: Switching timing of this signal is synchronized with the HSW edge just after switching timing of "D33 of IC3001 = 0 to 1". (The delay is within 1 edge) *From H to L: When Editing, this switching timing is before the switching timing of "D33 of IC3001 = from 1 to 0" by 60 +- 10msec in SP mode, by 100 +- 10msec in LP/EP mode. When normal rec mode, this switching timing is before the switching timing of "D33 of IC3001 = from 1 to 0" by 0 ~ 150msec.	Low	Low	Low
21	R_COLE_W (L)	O	Write protection releasing terminal for RAM correction EEPROM. *During ROM correction data being Written: "Low" is output. *Other than above condition: Hi-Z.	Hi-Z	Hi-Z	Hi-Z

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
22	NC	O	Low fix.	Low	Low	Low
23	NC	I	Low fix.	Low	Low	Low
24	D.A.REC(H)	O	Recording control signal for the Linear Audio.	Low	Low	Low
25	PAL 9H (H)	O	PAL 9H: High is output.	Low	Low	Low
26	BIAS(H)	O	Linear Audio REC/ERASE ON/OFF control terminal. (FULL ERASE ON/OFF control is combined with) *When recording the linear audio, the "Low" is output synchronizing with D.REC signal for IC3001. Output mode: REC(ADUB/AV-INSERT) *When the recording starts, "High" is output at 130-150m sec. after D.REC (H) for IC3001has been shifted to "High" from "Low". *When the recording stops, the "Low" is output. *Other than above: "Low" Level.	Low	Low	Low
27	STAB(L)	I	SAFETY TAB DETECTION *With SAFETY TAB: "Low" *Without SAFETY TAB:"High"	In	In	In
28	FM_MUTE	O	Audio mute control terminal. High output (AUDIO MUTE). The voltage is shifted to Hi-Z for reucing the current at 3 second after the power has been turned on .	Hi-Z	In	In
29	SW1	O	AUDIO SYSTEM (TUNER PRESET)=BG, I: High output AUDIO SYSTEM (TUNER PRESET)=DK, M: Low output For A: High fix.	Low	Low	Low
30	POS.SW4	I	Input terminal for mechanism position.	In	In	In
31	POS.SW3	I		In	In	In
32	POS.SW2	I		In	In	In
33	POS.SW1	I		In	In	In
34	RESET	I	RESET Terminal.	In	In	In
35	32KHz.IN	I	Sub clock (32.768KHz) osc. input terminal.	In	In	In
36	32KHz.OUT	O	Sub clock (32.768KHz) osc. output terminal	Out	Out	Out
37	5V(D)	-	VCC (5V) for Digital port	-	-	-
38	12MHz.IN	I	Main clock (12MHz) osc. input terminal.	In	In	In
39	12MHz.OUT	O	Main clock (12MHz) osc. output terminal.	Out	Out	Out
40	GND(OSC)	-	Digital GND for OSC circuit.	-	-	-
41	PAL PB (L)	O	3.58NTSC (D6=0, D7=0 both of IC3001): High output Other than above : Low output	Low	Low	Low

SW4	SW3	SW2	SW1	Position Name
1	1	1	0	EJECT Position
0	0	1	0	DOWN Position
0	0	1	1	R-REW Position
0	1	0	0	LOAD Position
0	1	0	1	REV Position
0	1	1	0	PLAY Position
0	1	1	1	P_OFF Position
1	0	0	0	STOP_R Position
1	0	0	1	STOP_F Position
1	1	0	0	FF/REW Position
1	1	1	0	FF2 Position
1	1	1	1	Intermediate Positions between each Positions

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
42	PAL_SQPB	O	50Hz Playback on SQPB: High output Other than above : Low output	Low	Low	Low
43	32K.START(L)	I	Clock souce selection terminal at reset starting. *12/16MHz(High speed) :Connected to VCC (5V). *32KHz(Slow speed) :Connected to Vss (0V).	In	In	In
44	LC.OSC.IN	I	Input terminal of the LC Oscillation (For OSD dot clock)	In	In	In
45	LC.OSC.OUT	O	Output terminal of the LC Oscillation (For OSD dot clock)	Out	Out	Out
46	GND	-	Connected to the GND (Test terminal "B" in the factory).	-	-	-
47	FSC.LPF	I	OSC Filter connection terminal for Internal sync generator.	In	Low	In
48	FSC.IN	I	Sub carrier (fsc) input terminal for sync generator.	In	Low	In
49	GND(OSD)	-	GND terminal for OSD circuit.	-	-	-
50	CVIN	I	Input terminal for composite video signal.	In	In	In
51	KILLER	I	When a signal that V-sync is 50Hz is putting in or playing back. * PAL/MESECAM distinction result input terminal. Low is put into this terminal: PAL High is put into this terminal: Dipend on MESECAM H /SECAM DET input terminal. When a NTSC signal is putting in. * Input terminal for distinction result of agreement between Fsc of input signal and frequency of OSC for sub-carrier that being chosen by IC3001. Low is put in: Agree High is put in: Different	In	In	In
52	CVOUT	O	Output terminal for the composite video signal.	Out	Out	Out
53	5V(OSD)	-	Power supply terminal for OSD	-	-	-
54	HLF	I	LPF connection terminal for slicer.	In	In	In
55	VHOLD	I	Capacitor connection terminal of the Reference voltage generator circuit for the slicer.	In	In	In
56	CVIN(EDS)	I	Composite video signal input terminal for the slicer.	In	In	In
57	GND	-	Connect to the GND (Test terminal "A" in the factory).	-	-	-
58	NC	O	Low fix.	Low	Low	Low
59	SECAM MIX (For other than NV-MV20GL)	I	SECAM CHROMA signal input terminal for SECAM SIGNAL SUPER IMPOSE.	Low	Low	Low
	NC (For NV-MV20GL)	O	Low fix.	Low	Low	Low
60	CHARA + HEM	O	OSD REC control terminal. 1. During OSD REC. *During OSD character is output (Including Hemming): "High" is output. *Output than above condition: "Low" is output. 2. Other than OSD REC: High-Z.	Hi-Z/Low	Hi-Z/Low	Hi-Z/Low
61	SW2	O	(For NV-MV20GL) High fix. (For other than NV-MV20GL) AUDIO SYSTEM = BG, DK: High is output. AUDIO SYSTEM = I, M: Low is output.	Low	Low	Low
62	A.SEARCH (L)	I/O	AGC gain selection signal for tuner CH selection. During digital AFC is working at TUNER PRESET mode: Low (AGC is high speed). Other than above: Hi-Z (AGC is normal speed).	Low	Low	Low
63	VBI2	O	NAVI writing terminal. * During NAVI data being written (During recording when JET NAVIGATOR is ON). OSD letters (Including the masking) being written : High Except OSD letters being written : Low * Other than above: Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
64	VBI1/CHARA	O	Terminal for both NAVI Writing and OSD REC Writing. 1. During NAVI writing (During recording in JET NAVIGATOR is ON) At NAVI data "H" being written : High is output At NAVI data "L" being written : Low is output At except NAVI data being written : Low is output 2. During OSD REC (During recording in OSD REC is ON) During OSD letters (Except the masking) being written : High is output Except OSD letters being written : Low * Other than above condition : Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z
65	UNLOADING(H)	O	Control terminal for the Unloading operation.	Low	Low	Low
66	FLD_CS	O	Chip select signal for FIP driver. *Active: "Low" *Non-active: "High"	(Normal ope.)	Low	Low
67	LOADING(H)	O	Control terminal for the loading operation.	Low	Low	Low
68	IC.DATA.OUT	O	Timer-Bus signal for peripheral ICs control: Data output	(Normal ope.)	In	Hi-Z
69	IC.DATA.IN	I	Timer-Bus signal for peripheral ICs control: Data input	(Normal ope.)	In	In
70	IC.DATA.CLK	O	Timer-Bus signal for peripheral ICs control:Clock outout	(Normal ope.)	In	Hi-Z
71	IIC.CLK	O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
72	IIC.DATA	I/O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
73	125Hz/ROM.CORE	O	ROM Correction confirmation mode: * ROM correction setting bit is "ON": "High". * ROM correction setting bit is "OFF": "Low" is existed. (Other than ROM Correction confirmation mode, this terminal is the output terminal of internal clock for main clock adjustment.:Outputting the 125Hz.)	(Normal ope.)	Low	Low
74	CAP R/F	O	The rotation direction control terminal of the capstan driver. *RVS="High" *FWD="Low".	Low	Low	Low
75	NC	O	Low fix.	Low	Low	Low
76	CAP.ET	O	Power supply terminal for the capstan motor control. (Conpared with the driver reference voltage, when it is "low", current will be cut. Also when it is "high", the rotation speed will be accelerated.)	High PWM=0V	Low	High PWM=0V
77	CYL.ET	O	Power supply terminal of the cylinder motor control: (Conpared with the driver reference voltage, when it is "high", current will be cut. Also when it is "low", the rotation speed will be accelerated. (Max:2.8V))	Low PWM=2.800 V	Low	Low PWM=2.800 V
78	P.FAIL(L)	I	Input terminal for the power failar detection. Power failar : "Low".	In	In	In
79	S.REEL.PULSE	I	Input terminal of the S.Reel pulse.	In	In	In
80	T.REEL.PULSE	I	Input terminal of the T.Reel pulse.	In	In	In
81	SP(L)	O	REC MODE DATA *N2H/P3H:"Low" *N4H/N6H/N10H/P6H/P9H:"High"	Low	Low	Low
82	EX.FF/REW (L)	I/O	Control signal filter select terminal in FF/REW mode. *During FF/REW: Hi-Z *Except FF/REW: Low	Low	Low	Low
83	P.ON(H)	O	ON/OFF control terminal for the VCR Power. Power_ON : "High"	Low	Low	Low
84	AVR (L)	I/O	Simplified AI playback ON/OFF control.	Low	Low	Low
85	SQPB (H)	I	The distinction results whether S-VHS or VHS of the playback tape is input in VV mode. *"Low" is input: VHS tape playback. *"High" is input: S-VHS tape playback. NOTE: When the MESECAM (H) terminal receives "High", above result is invalidated and the tape is judged to VHS tape playback. *In case of model having SQPB function, ON/OFF setting of SQPB is performed with above result, Envelope voltage and result wheather the CTL pulse exists not. *In case of model not having SQPB function, above result is disregarded, and the VCR is always set to SQPB = off.	In	In	In
86	FG.AMP.OUT	O	Output terminal for the Capstan FG AMP signal.	Out	Out	Out
87	FG.AMP.IN	I	Input terminal for the Capstan FG AMP signal.	In	In	In
88	GND(A)	-	GND for Analogue circuit.	-	-	-

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
89	MESECAM (H)	I	Distinction terminal for the Video system. 1. In the VV mode. *"High" is input: Playback of a MESECAM recorded tape. *"Low" is input: Playback of other than MESECAM recorder tape. 2. In the EE mode. *"High" is input: Receiving a SECAM broadcast, or a SECAM signal is input. NOTE: *In case of model having MESECAM / SECAM REC/PLAY, the video system is controlled with above result. *In case of model do not having MESECAM / SECAM REC/PLAY, the above result is invalidated.	In	In	In
90	CYL.PFG	I	Input terminal for the Cylinder PG/FG.	In	In	In
91	OREF	O	1/2 VDD reference voltage output terminal for the Analogue AMP.	Out	Out	Out
92	IREF	I	1/2 VDD reference voltage input terminal for the Analogue AMP.	In	In	In
93	GND	I	GND	In	In	In
94	CTL.HEAD(-)	I/O	I/O terminal for the Control head (-)	In/Out	In/Out	In/Out
95	CTL.HEAD(+)	I/O	I/O terminal for the Control head (+)	In/Out	In/Out	In/Out
96	CTL.AMP.REF	I	Capacitor connection terminal for reference of the control AMP.	In	In	In
97	PB.CTL.OUT	O	Output terminal for the Control AMP.	Out	Out	Out
98	5V(A)	-	Power supply terminal for Analogue AMP.	-	-	-
99	5V(AD)	-	Reference power supply terminal for the AD/8bit DA	-	-	-
100	NTSC (L)	O	PLAYBACK MODE.....50Hz:"High" 60Hz:"Low"	Low	Low	Low

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

Ref. No.	IC1511					IC1512														
MODE	1	2	3	4		1	2	3	4											
STOP	1.2	2.4	5.0	0.0		0.0	1.3	5.0	0.0											
PLAY	1.2	2.4	3.5	0.0		0.0	1.3	5.0	0.0											
REC	1.2	2.4	3.5	0.0		0.0	1.3	4.9	0.0											
F.F	1.2	2.4	2.4	0.0		0.0	1.3	2.5	0.0											
REW	1.2	2.4	2.3	0.0		0.0	1.3	2.4	0.0											
Ref. No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.6	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
PLAY	12.3	0.3	0.0	0.3	0.0	0.0	16.3	0.0	2.8	1.7	1.7	0.7	1.4	2.4	2.5	2.5	2.5	1.3	5.0	3.6
REC	12.2	0.3	0.0	0.3	0.0	0.0	16.3	0.0	2.9	1.6	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
F.F	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
REW	12.3	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.8	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3..9
Ref. No.	IC2501																			
MODE	21	22	23	24	25															
STOP	12.2	3.5	3.5	0.0	3.5															
PLAY	12.3	3.6	3.6	0.0	3.6															
REC	12.2	3.6	3.5	0.0	3.6															
F.F	12.3	3.5	3.5	0.0	3.5															
REW	12.3	3.6	3.8	0.0	3.6															
Ref. No.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	0.4	2.6	2.6	2.9	3.9	4.9	4.9	4.9	3.3	0.1	0.0	0.0	0.0	5.1	0.0	0.0	4.9	2.5	0.0	0.0
PLAY	0.4	2.6	2.6	2.9	3.9	4.9	4.9	4.9	4.0	0.1	4.9	0.0	0.0	5.1	0.0	0.0	4.9	2.5	2.5	0.0
REC	0.4	2.6	2.6	2.9	3.9	4.9	4.9	4.9	3.3	0.1	4.9	0.0	0.0	5.1	0.0	0.0	4.9	2.5	0.0	4.9
F.F	0.4	2.6	2.6	2.9	3.9	4.9	4.9	4.9	3.3	0.1	4.9	4.9	0.0	5.1	0.0	0.0	4.9	2.5	0.0	0.0
REW	0.4	2.6	2.6	2.9	3.9	4.9	4.9	4.9	3.3	0.1	4.9	4.9	0.0	5.1	0.0	0.0	4.9	2.5	0.0	0.0
Ref. No.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0.4	0.0	4.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	4.9	4.9	4.9	4.9	-	-	4.9	-	-	0.0
PLAY	0.4	0.0	4.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	4.9	4.9	0.0	5.0	-	-	5.0	-	-	0.0
REC	0.4	0.0	4.4	4.9	0.0	4.9	0.0	0.1	0.0	0.0	0.0	4.9	0.0	4.9	-	-	4.9	-	-	0.0
F.F	0.4	0.0	4.4	0.0	0.0	0.0	0.0	0.1	0.0	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
REW	0.4	0.0	4.4	0.0	0.0	0.0	0.0	0.1	0.0	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
Ref. No.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.9	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.1	2.1	1.8	2.0	0.0	0.0	0.0	0.0
PLAY	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
REC	4.9	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.1	2.1	1.8	2.0	0.0	0.0	0.0	0.0
F.F	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
REW	0.0	0.0	0.0	4.6	4.6	0.0	1.7	2.2	0.0	1.7	0.0	1.7	5.2	2.1	1.8	2.0	0.0	0.0	0.0	0.0
Ref. No.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0.0	0.7	0.0	0.0	0.0	3.0	0.0	4.0	4.0	4.1	4.0	2.5	0.0	0.0	0.0	0.0	2.4	5.1	5.0	0.2
PLAY	0.0	0.7	0.0	0.0	0.0	3.0	0.0	4.0	4.0	4.1	4.0	2.5	0.0	0.0	0.0	2.5	2.4	5.2	0.1	4.2
REC	0.0	0.7	0.0	0.0	0.0	3.0	0.0	4.1	4.1	4.1	4.0	2.5	0.0	0.0	0.0	2.5	2.4	5.1	3.8	5.0
F.F	0.0	0.7	0.0	0.0	0.0	3.0	0.0	4.1	4.1	4.1	4.0	2.5	0.0	0.0	2.8	2.8	2.4	5.1	2.4	2.4
REW	0.0	0.7	0.0	0.0	0.0	3.0	0.0	4.1	4.1	4.1	4.0	2.5	4.9	0.0	4.9	4.9	2.4	5.1	2.4	2.4
Ref. No.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	0.0	0.0	4.9	2.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.5	2.5	2.5	2.5	5.1	5.1	5.1
PLAY	0.0	0.0	4.9	2.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.6	5.1	5.2	5.1
REC	0.0	0.0	4.9	2.0	0.0	2.6	2.6	0.0	0.3	1.3	2.6	2.6	0.0	2.3	2.7	2.5	2.5	5.1	5.1	5.1
F.F	0.0	0.0	4.9	2.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.5	5.1	5.1	5.1
REW	0.0	0.0	4.9	2.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.7	5.2	5.2	5.1
Ref. No.	IC6201						IC6301													
MODE	1	2	3	4	5		1	2	3	4	5	6								
STOP	5.1	5.1	0.0	-	-		6.1	0.0	4.9	1.2	0.0	5.0								
PLAY	5.2	5.1	0.0	-	-		6.1	0.0	4.9	1.2	0.0	5.0								
REC	5.1	5.1	0.0	-	-		6.0	0.0	4.9	1.2	0.0	5.0								
F.F	5.2	5.2	0.0	-	-		6.5	0.0	4.9	1.2	0.0	5.0								
REW	5.1	5.2	0.0	-	-		6.3	0.0	4.9	1.2	0.0	5.0								

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

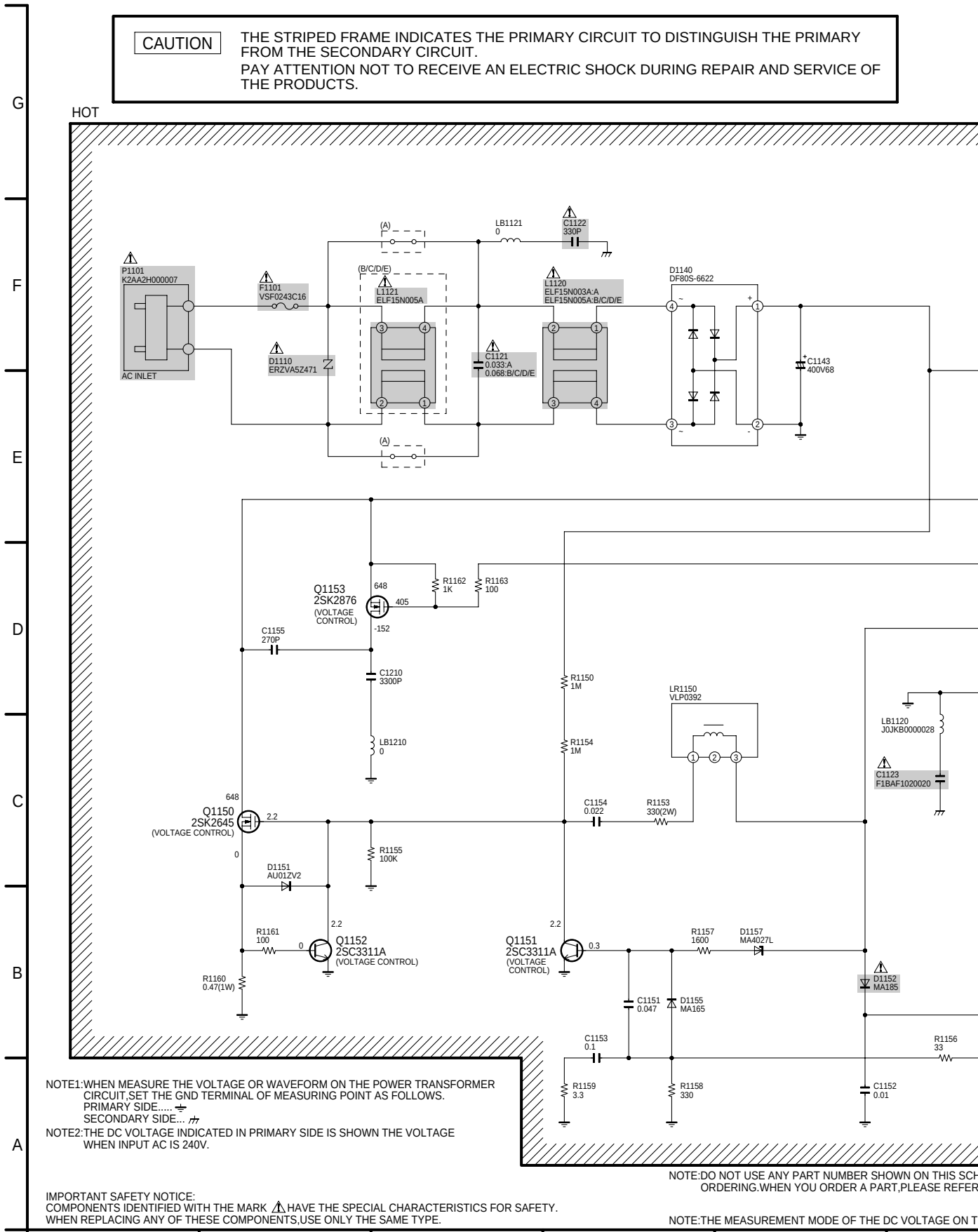
Ref. No.	Q1501				Q1502				Q7701											
MODE	+	−			+	−			E	C	B									
STOP	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
PLAY	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
REC	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
F.F	4.9	0.0			5.1	0.0			2.3	0.0	1.7									
REW	4.9	0.0			5.1	0.0			2.3	0.0	1.7									

8 SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.



NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCH
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER

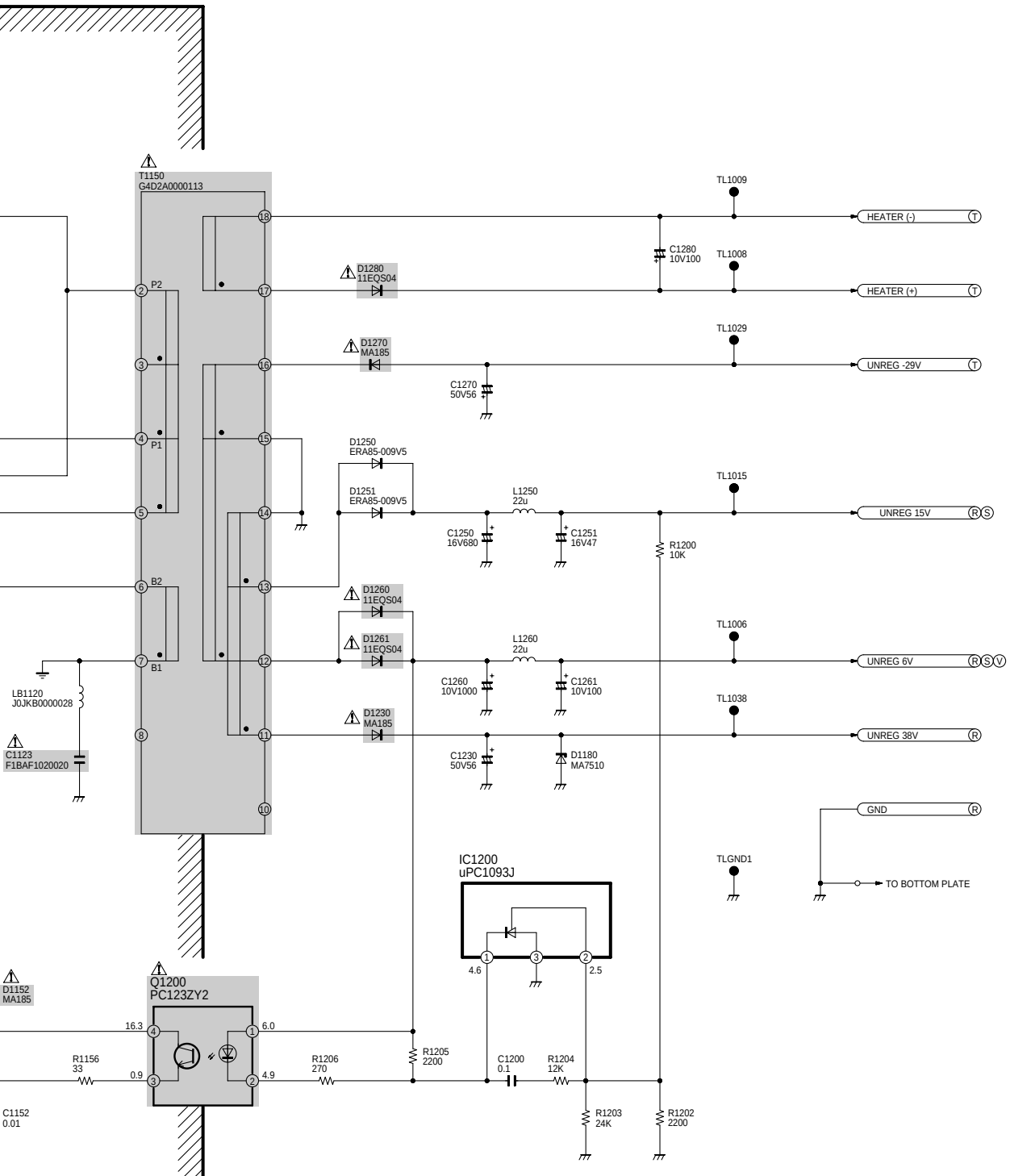
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON T

M

OF

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION



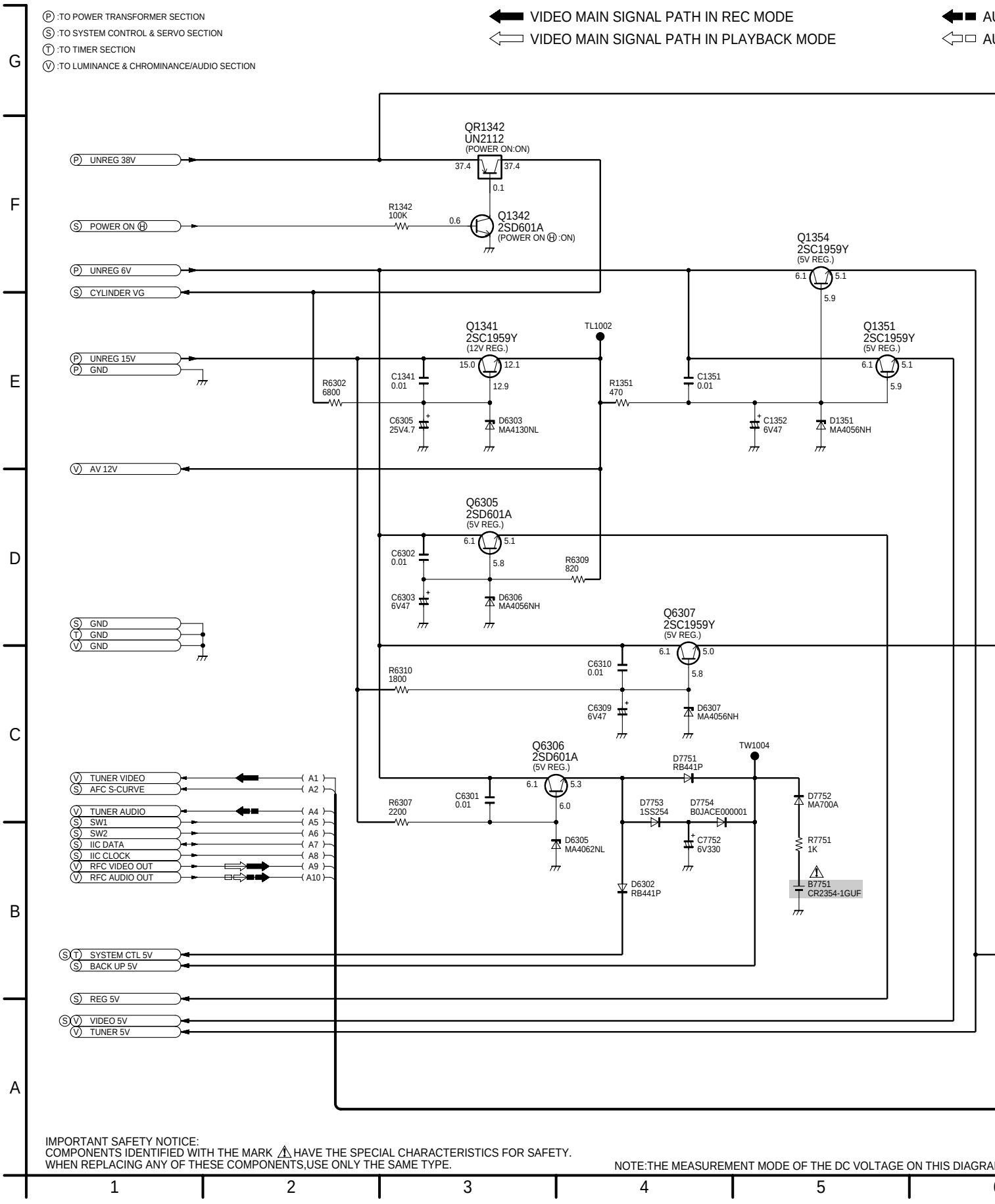
SHOWN ON THIS SCHEMATIC DIAGRAM FOR
PART,PLEASE REFER TO PARTS LIST.

HE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
POWER TRANSFORMER
SECTION SCHEMATIC DIAGRAM

6 7 8 9 10

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM

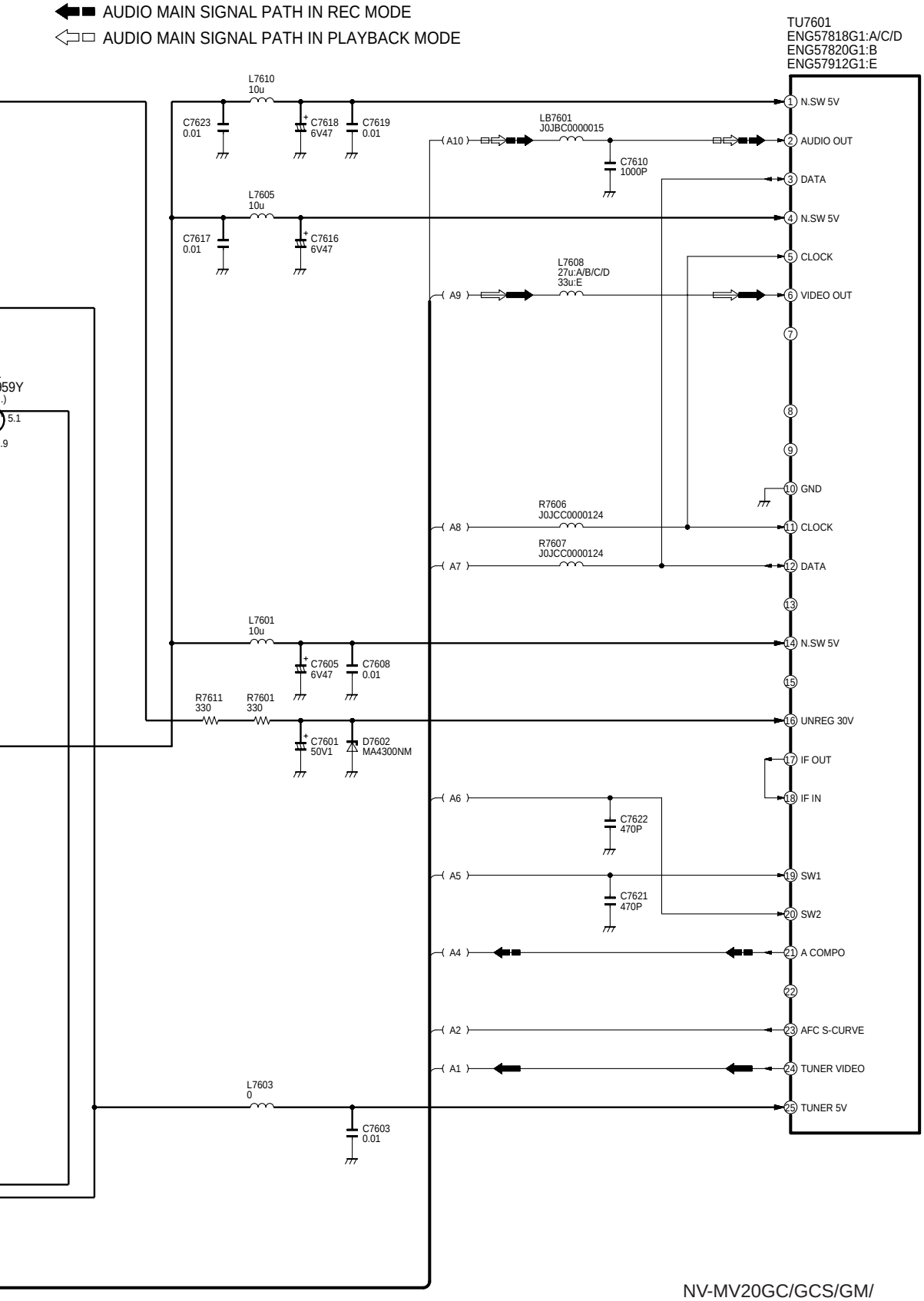


IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRA

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



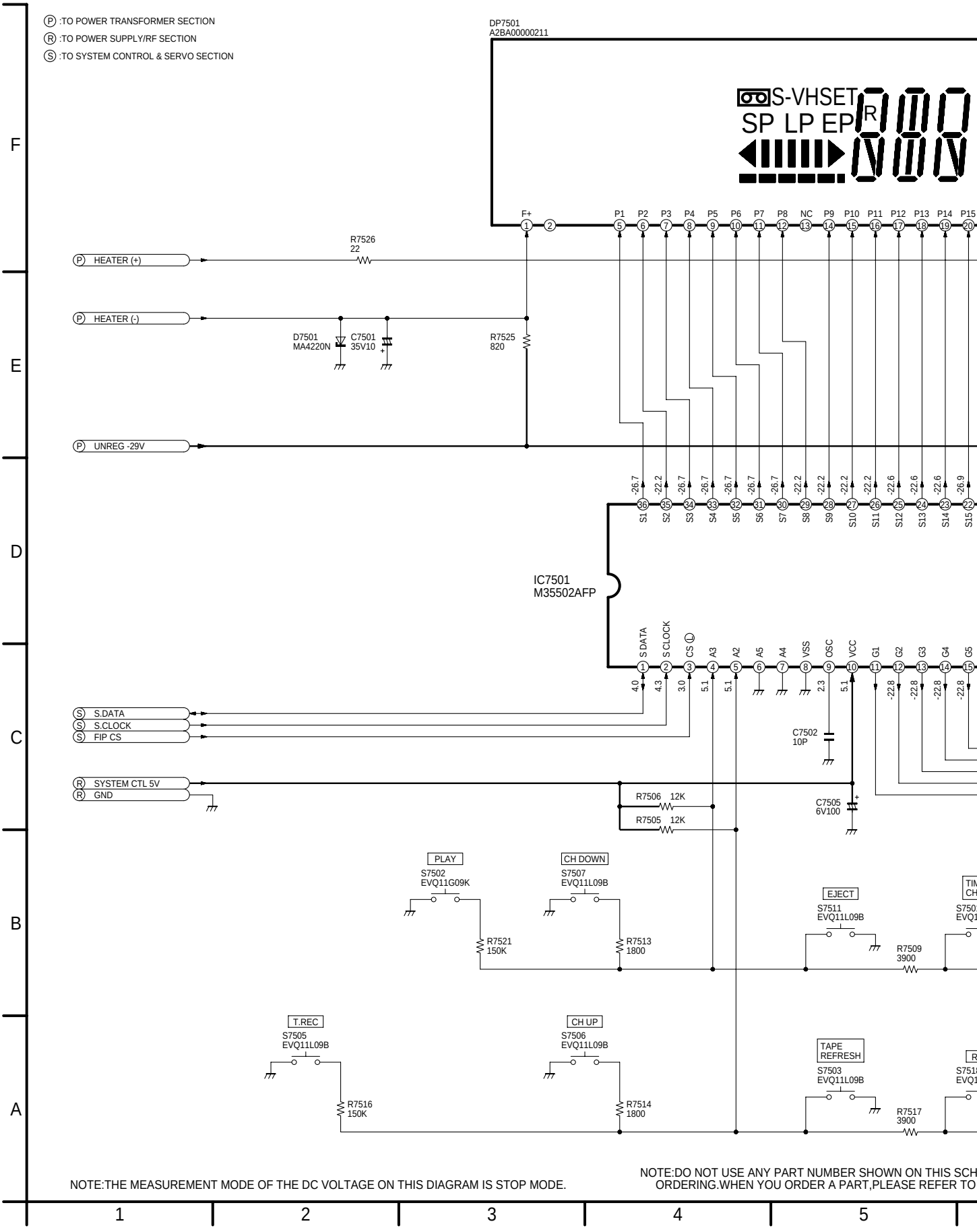
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

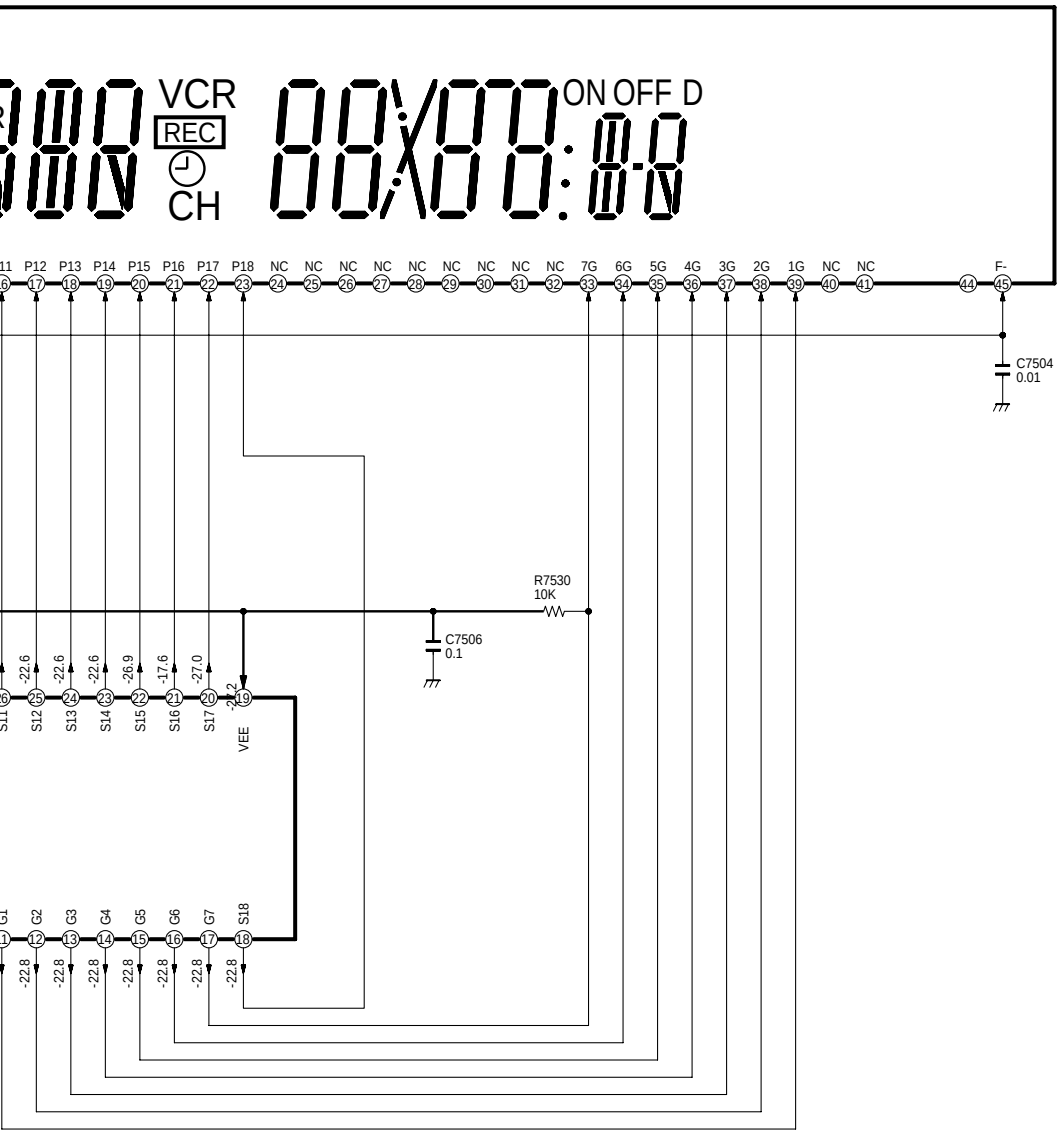
NV-MV20GC/GCS/GM/ GL/EE/GCU/GCF/GH POWER SUPPLY/RF SECTION SCHEMATIC DIAGRAM

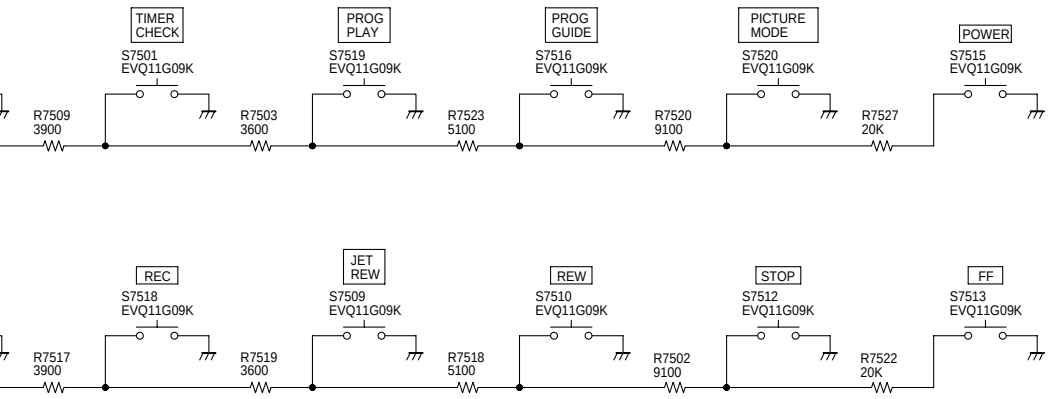
E ON THIS DIAGRAM IS STOP MODE.

6 7 8 9 10

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM





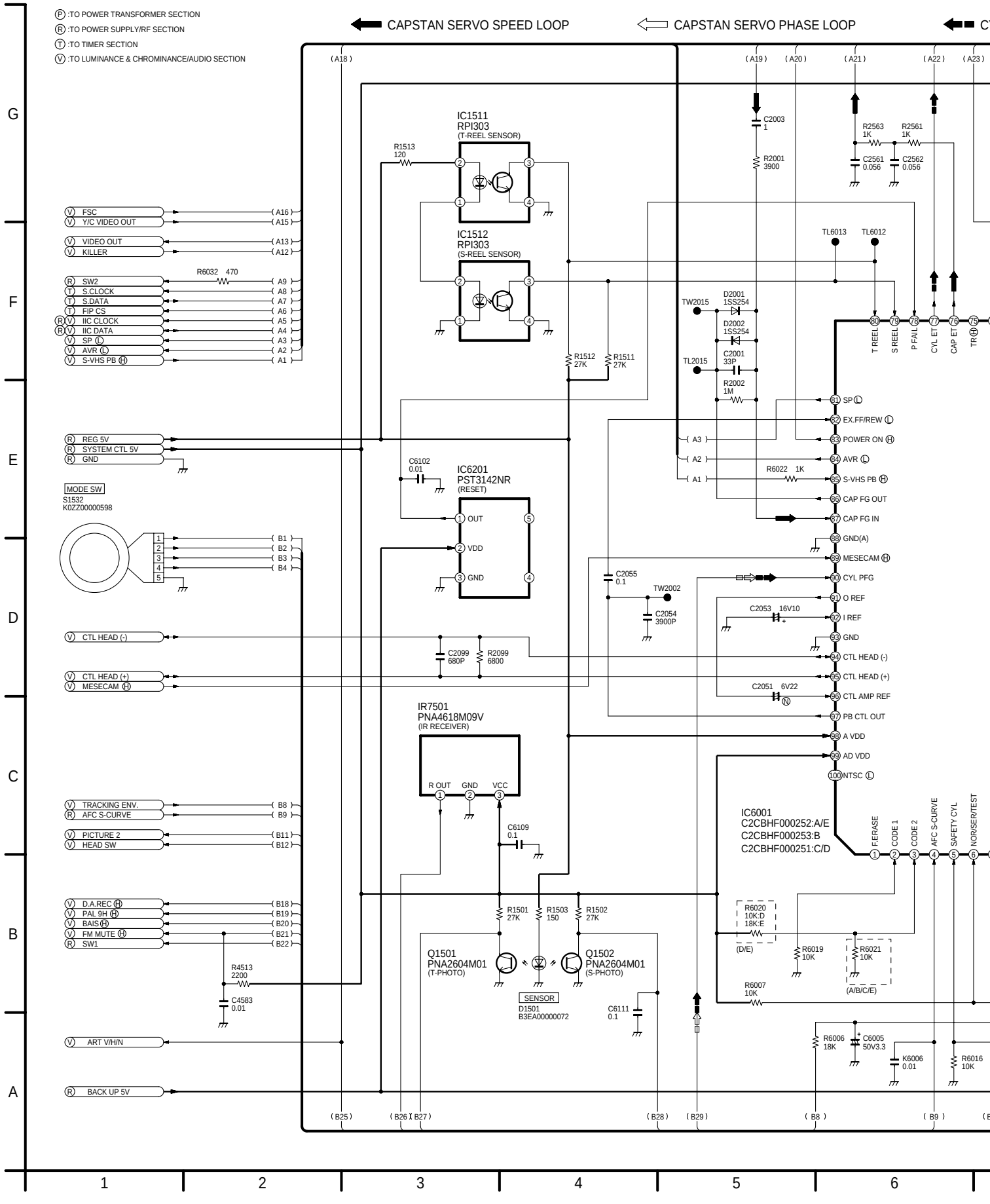


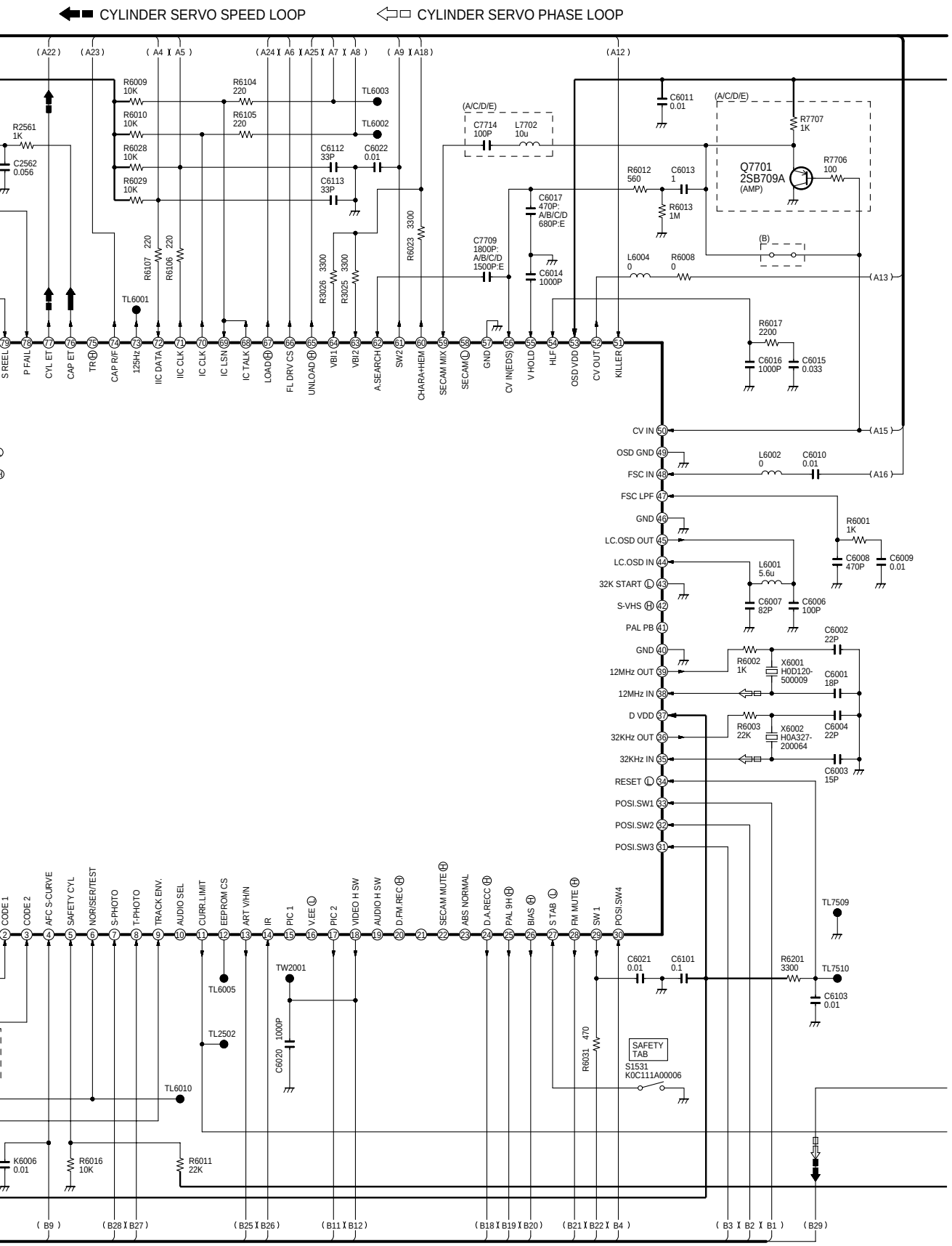
OWN ON THIS SCHEMATIC DIAGRAM FOR
PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
TIMER SECTION SCHEMATIC DIAGRAM

6	7	8

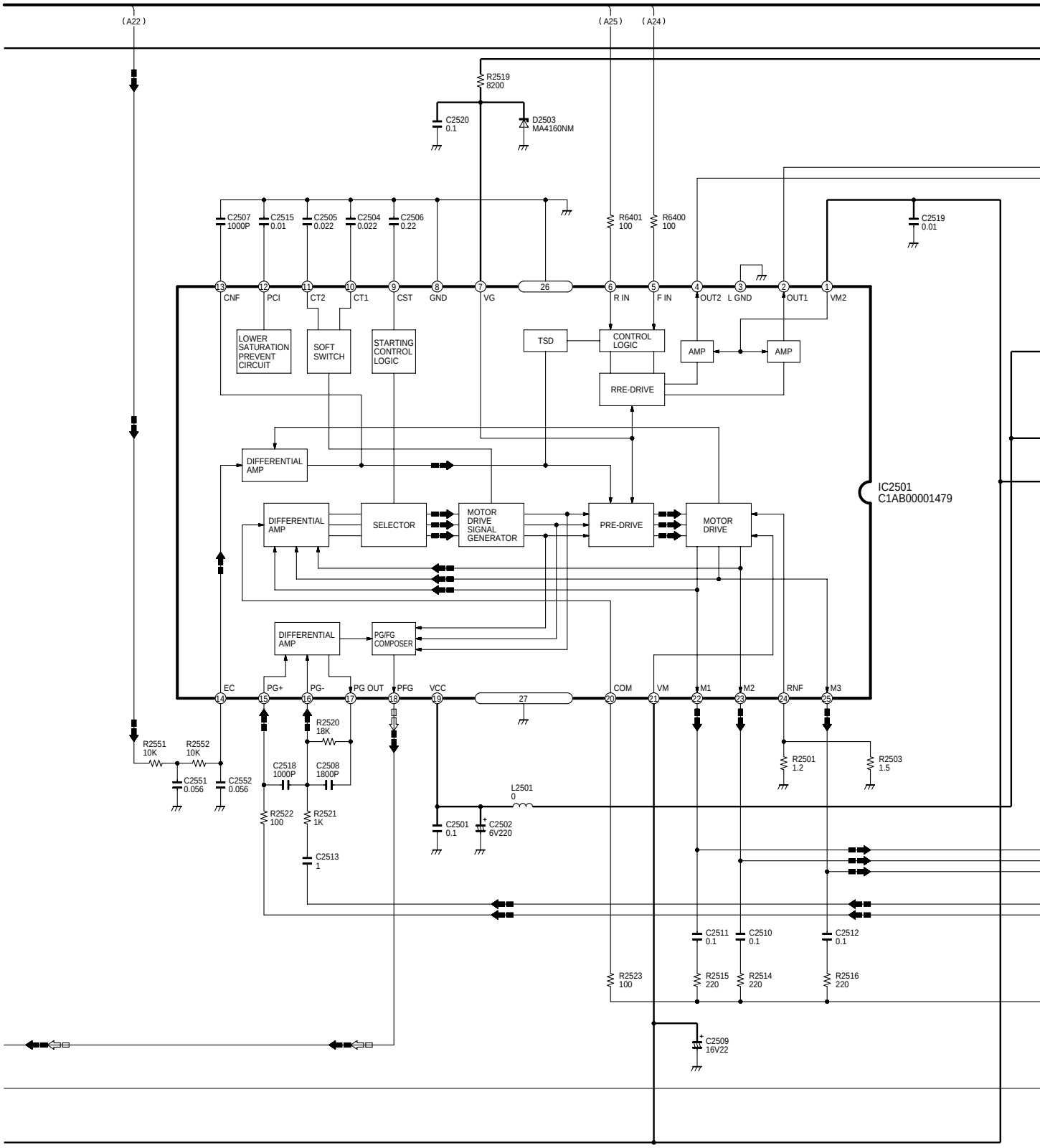
8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM





NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

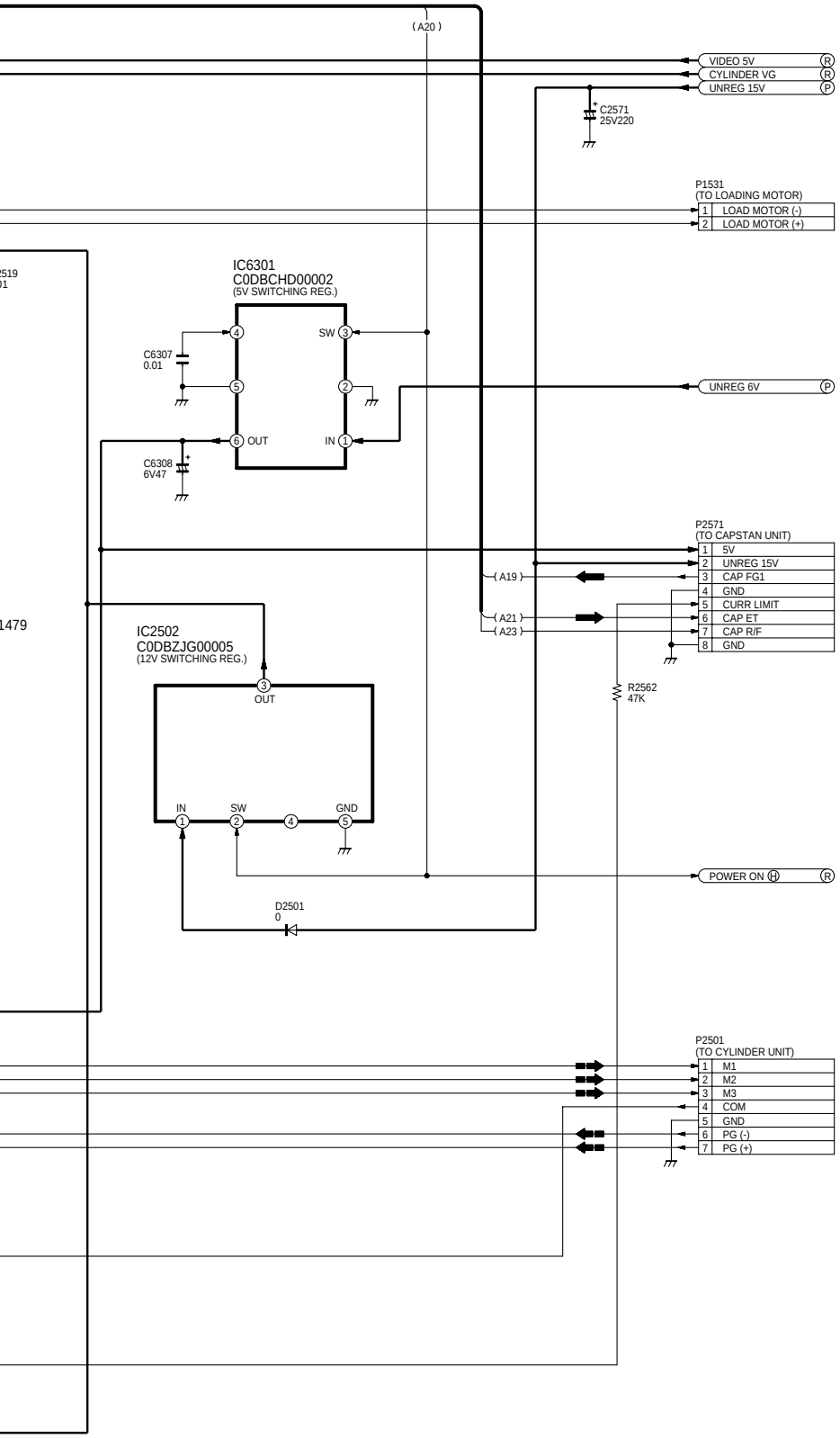
6 | 7 | 8 | 9 | 10 | 11



NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRA
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

12 | 13 | 14 | 15 | 16 | 17

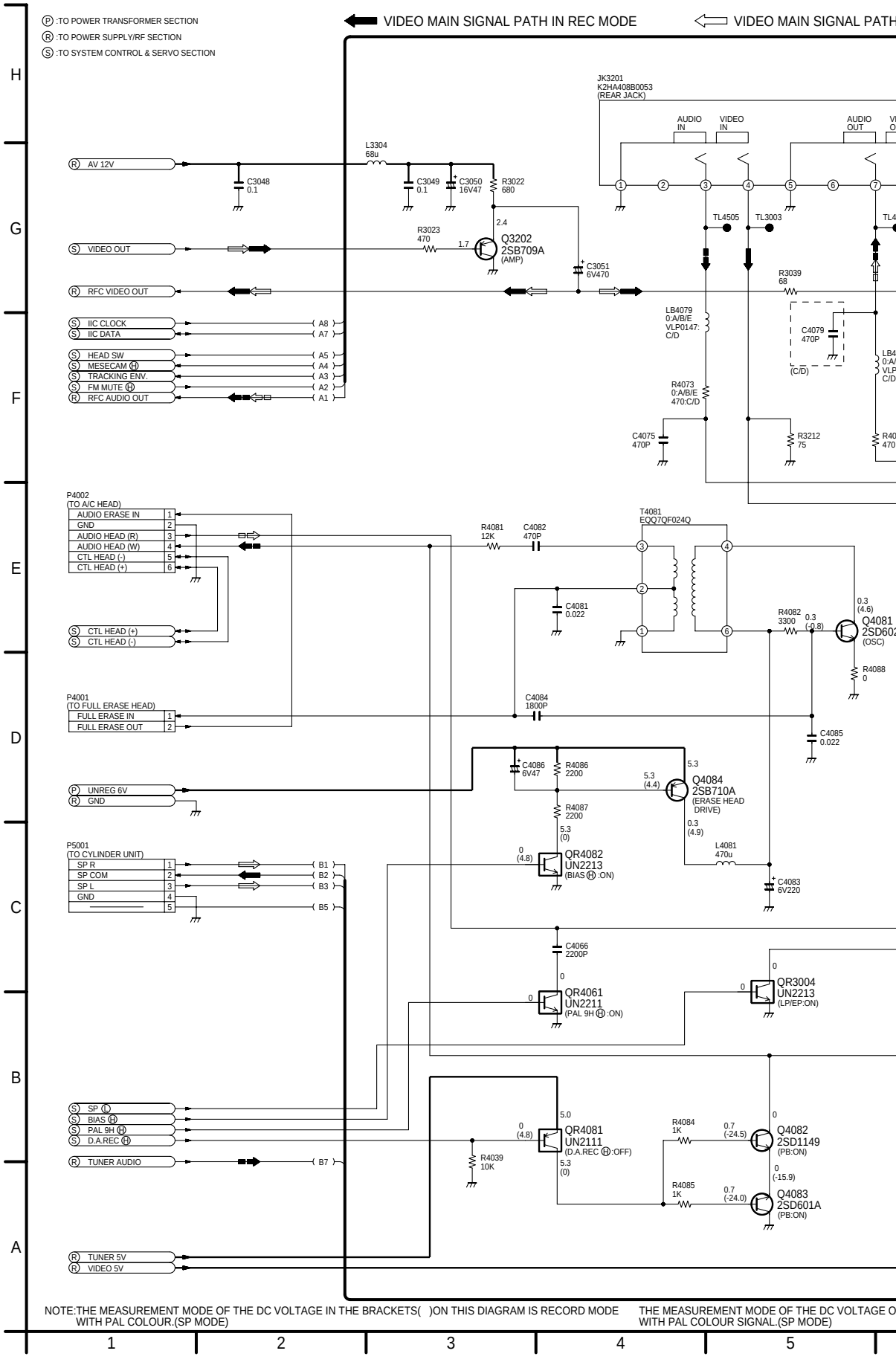


S SCHEMATIC DIAGRAM FOR
EFER TO PARTS LIST.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

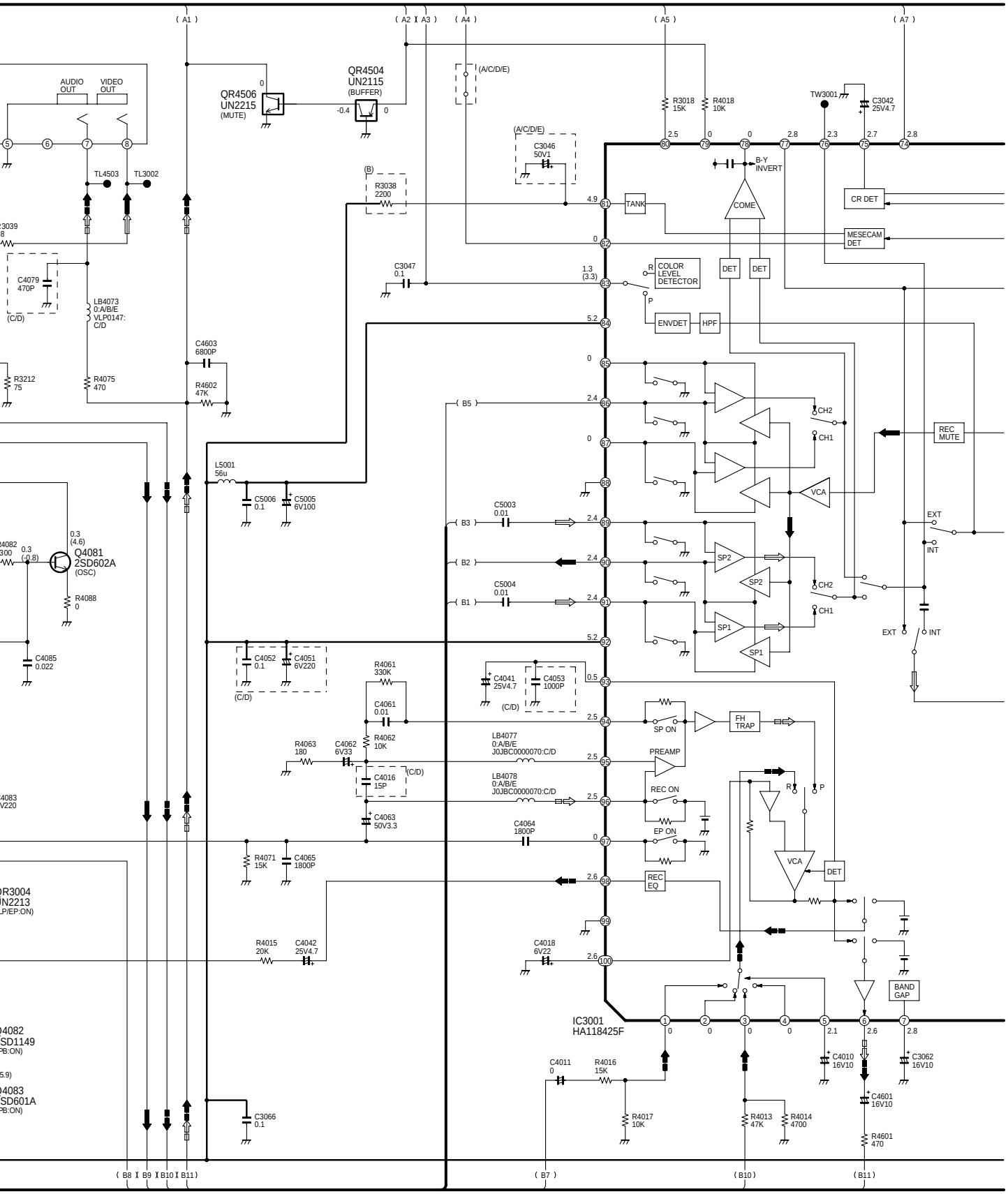
17 | 18 | 19 | 20

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGR



C DIAGRAM

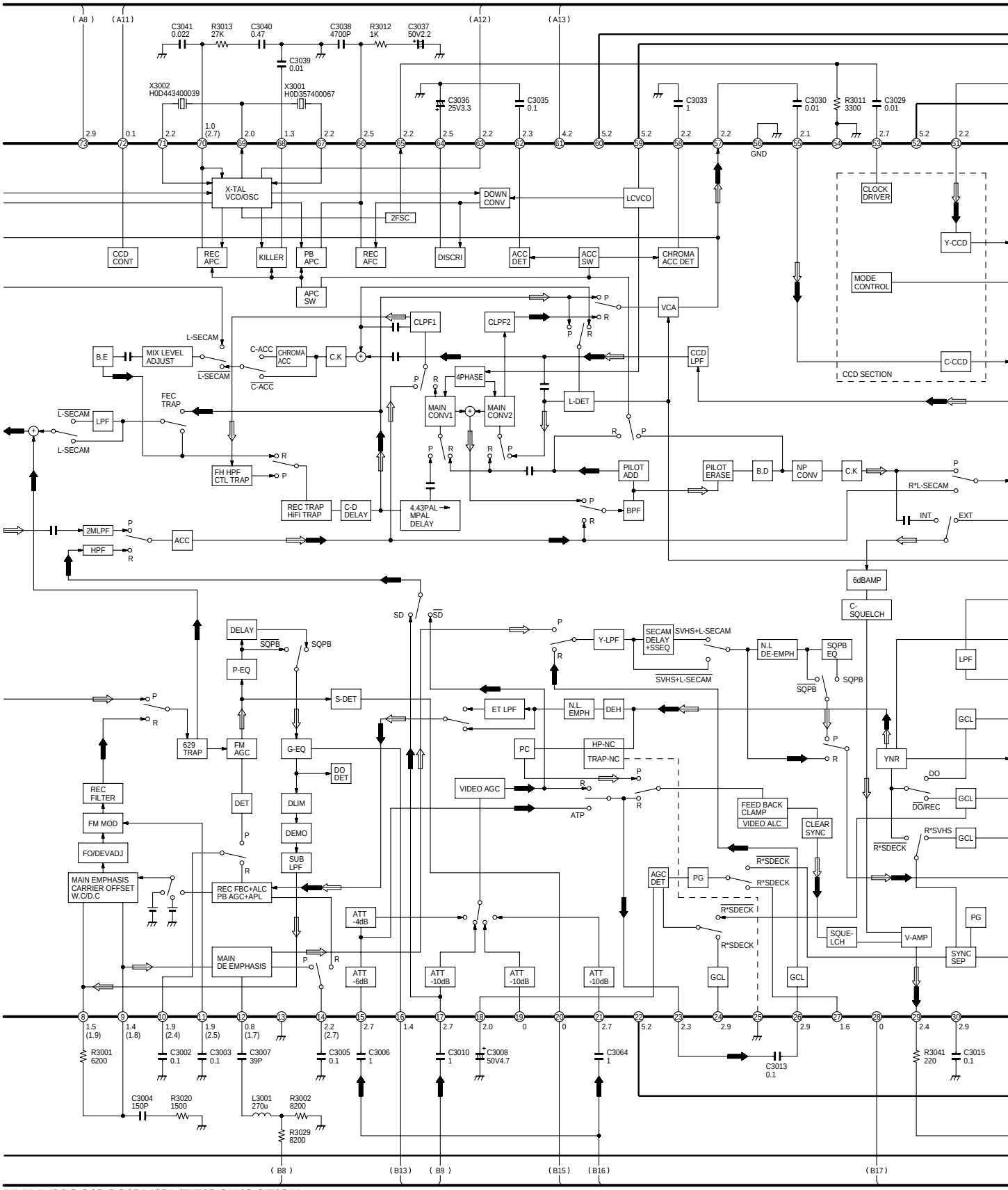
MAIN SIGNAL PATH IN PLAYBACK MODE ◀■■ AUDIO MAIN SIGNAL PATH IN REC MODE ◁□□ AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE



OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE
SP MODE)

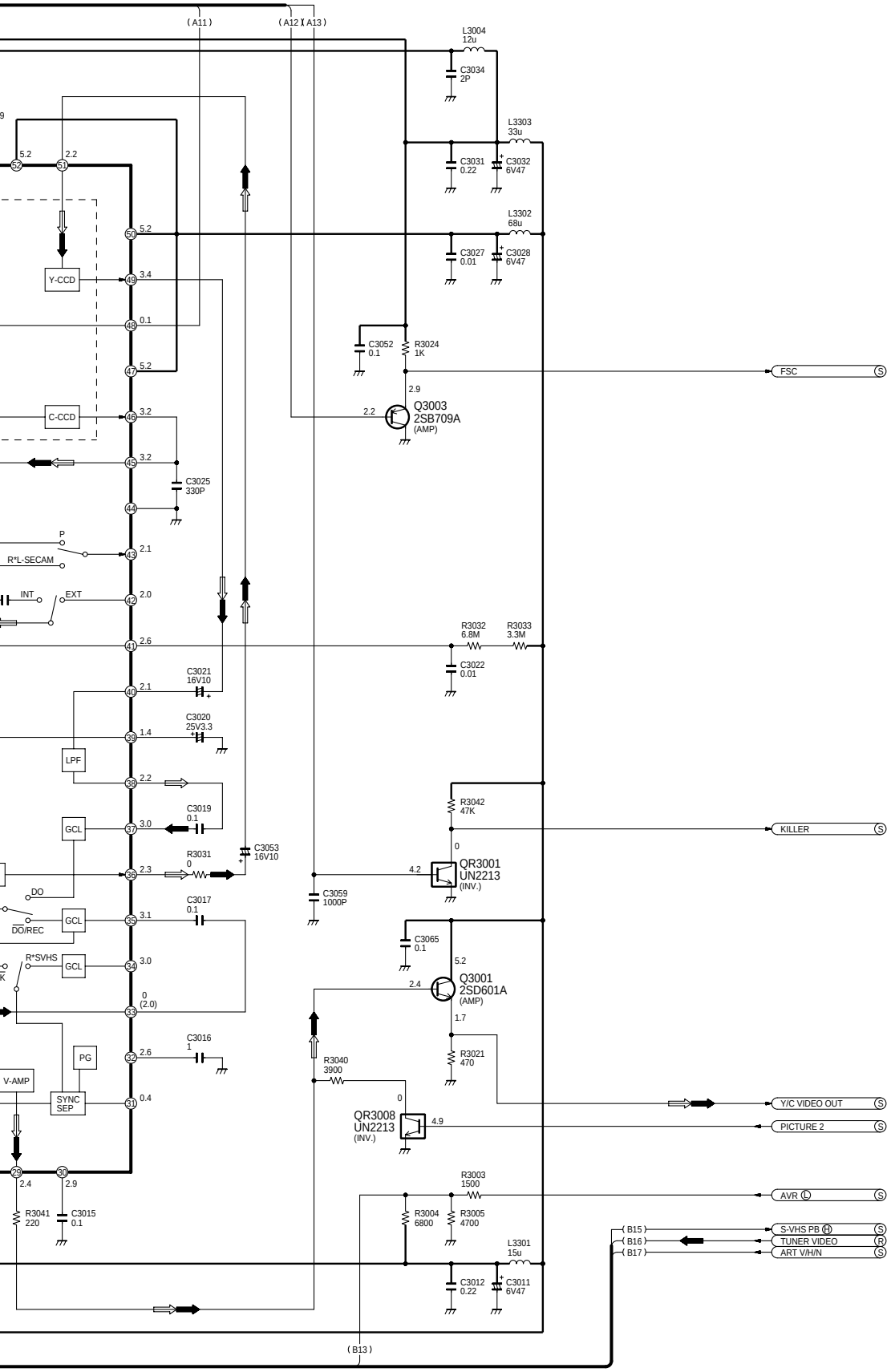
NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

5 | 6 | 7 | 8 | 9 | 10 | 11



NV-MV20GC/GCS/GM/GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

12 | 13 | 14 | 15 | 16 | 17 | 18



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-MV20GC/GCS/GM/
GL/EE/GCU/GCF/GH
LUMINANCE & CHROMINANCE
/AUDIO SECTION
SCHEMATIC DIAGRAM